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Astronomische Beobachtungen

auf der Sternwarte

der Königlichen Rheinischen Friedrich-Wilhelms-Universität

zu Bonn

angestellt und herausgegeben

von

Dr. Friedrich Wilhelm August Argelander,
Director der Sternwarte.

Vierter Band.

Bonner Sternverzeichniss.

Zweite Section.

Bonn,
bei Adolph Marcus.
1861.

Bonner Sternverzeichniss

Zweite Section

enthaltend die genäherten mittleren Oerter von 105075 Sternen zwischen 20 und 41 Grad nördlicher Declination für den Anfang des Jahres 1855.

Unter Mitwirkung der Herren

Professor Dr. E. Schönfeld und Dr. A. Krüger

auf der Sternwarte

der Königlichen Rheinischen Friedrich-Wilhelms-Universität

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beobachtet und berechnet

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Einleitung.

1.

Der gegenwärtige Band enthält das Verzeichniss der auf der zweiten Section des Bonner Himmelsatlasses zwischen zwanzig und einundvierzig Grad nördlicher Declination verzeichneten Sterne; ihre Zahl ist 105075 oder über 16 auf den Quadratgrad. Hiernach ist die zweite Section verhältnissmässig reicher an Sternen als die erste, welche nur etwas über 14 Sterne auf den Quadratgrad ergab. Dieser grössere Reichthum ist wohl zum Theil nur scheinbar, und durch die Beobachtungsart selbst entstanden: Ein grosser Theil der Zonen aus der ersten Section sind zu der Zeit beobachtet, als der Cometensucher noch nicht mit dem Kellnerschen Ocular versehn war, und nicht so schwache Sterne zeigte, als später mit demselben. Auch die Exstinction des Lichts ist bei 40° Höhe schon bedeutend, und die Beobachter hatten natürlich Anfangs nicht die Uebung, die sie sich im Verlaufe der Beobachtungen angeeignet hatten, als die Zonen für die zweite Section begannen. Daher sind namentlich in den sternreichern Gegenden früher gewiss eine Menge schwächerer Sterne ausgelassen, während solche von gleicher Helligkeit in der zweiten Section beobachtet sind, zumal sie sich hier bei der langsamern Bewegung nicht so sehr drängten. Auch sind die Revisionen durch Revisionszonen und am Meridiankreise im Bereiche der zweiten Section zahlreicher gewesen, als in der ersten, bei der durch die Berliner und die Hindschen Charten so wie durch den Markree-Catalogue zahlreiche Hülfsmittel vorlagen, die sich ergebenden Zweifel ohne Revision zu lösen. Bei diesen Revisionen sind dann aber immer auch nicht nur eine Menge von solchen Sternen 9.10 Grösse constatirt worden, die in den Cometensucherzonen nur einmal vorkamen, und ohne diese Constatirung also auf den Charten und in dem Verzeichnisse keine Aufnahme gefunden hätten, sondern es sind auch häufig zwei schwächere nahe Sterne gefunden worden, wo die Cometensucherzonen nur einen hellern angaben.

Indess glaube ich doch diesen Umständen allein den grössern Sternreichthum der zweiten Section cht zuschreiben zu dürfen, sondern halte ihn zum Theil für reell, erzeugt durch den verhältnissmässig grössern Theil der Milchstrasse, der in derselben liegt, zumal diese gerade im Schwan so überaus sternreich ist. Es zeigt sich diese grössere Gedrängtheit der Sterne nach Norden hin, der Milchstrasse zu, deutlich, wenn wir den ganzen Streifen in Unterabtheilungen theilen, wie dies aus dem folgenden Tableau hervorgeht, in welchem ich Zonen von 3° Breite angenommen, und diesen zur bessern Vergleichung noch die 3 nächsten 3° breiten Zonen aus der dritten Section hinzugefügt habe. Die erste Columne enthält die Gränzen der Zone, die zweite die Anzahl der in ihr um den ganzen Himmel herum befindlichen Sterne, die dritte gibt in Ganzen und Zehntheilen an, wie viel deren auf einen Quadratgrad kommen.

20°—23°	15437	15.3
23—26	14813	15.1
26—29	14135	14.8
29—32	15194	16.3
32—35	14679	16.3
35—38	15264	17.6
38—41	15577	18.7
41—44	14415	18.1
44—47	13238	17.5
47—50	12970	18.1

Wenn die ganze Arbeit geschlossen ist, werde ich eine mehr ins Detail gehende Uebersicht über die Vertheilung der Sterne am nördlichen Himmel mittheilen. Diese kann aber natürlich kein klares Bild geben, weil von den schwächern Sternen 9.10^m in den sternarmen Gegenden nur sehr wenige, dagegen in den reichen ein sehr grosser, wenn nicht der grösste Theil ausgelassen sein wird. Es wäre aber gewiss für die Erkenntniss der Anordnung unsres Sternhaufens von der grössten Wichtigkeit, wenn wir hierüber genaue Abzählungen hätten, und zwar nicht allein über das Zahlenverhältniss der Sterne im Allgemeinen, sondern namentlich auch über das Verhältniss derselben in den verschiedenen Grössenclassen. Hieraus würde sich eine Entscheidung herbeiführen lassen über die Richtigkeit der älteren Herschelschen Ansicht von der Gestaltung unsres Milchstrassensystems, und ich glaube zu Gunsten derselben.

Wenn wir auch im Allgemeinen annehmen können, dass die schwächern Sterne auch die entferntern sind, so dürfen wir doch nicht ausser Acht lassen, dass ausser der Entfernung noch zwei andere Ursachen die Helligkeit derselben bedingen, ihre Grösse und ihre Leuchtkraft. Die Erfahrung also, dass wir gegen die Pole der Milchstrasse hin eben so schwache Sterne gewahr werden, als in dieser selbst, darf uns allein noch nicht zu dem Schlusse verleiten, dass unser Sternsystem nach allen Richtungen hin gleich ausgedehnt sei. Hierzu könnten wir uns nur berechtigt halten, wenn auch das numerische Verhältniss der hellern zu den schwächern Sternen überall das gleiche wäre. Sollte sich aber herausstellen, dass in gewissen Richtungen dieses Verhältniss ein bedeutend verschiedenes wäre, so würden wir daraus schliessen müssen, dass da wo eine bedeutend geringere Zahl von schwachen Sternen sich zeigt, diese nicht viel entfernter, sondern nur an sich schwächer sind, und dass daher die Ausdehnung unsres Systems eine geringere sei. Dass dies gegen den Nordpol der Milchstrasse hin wirklich der Fall ist, zeigt eine freilich rohe Schätzung. Ich habe nämlich die Zahl der Sterne verglichen, die auf gleichen Flächenräumen in der Nähe des Nordpols der Milchstrasse und in dieser selbst nach meiner Uranometrie, nach der Durchmusterung und nach den Herschelschen Sternaichungen vorkommen, für welche Sammlungen man als untere Helligkeitsgränzen, da unsre schwächern Sterne 9.10^m gewiss eigentlich nur 10.^{m} sind, die 6te, 10te und 18te Grösse wird annehmen können. Die Verhältnisse sind für die

Uranometrie	1: 2.5
Durchmusterung	1: 3.5
Herschel	1:35

Das Verhältniss für die Duchmusterung ist jedenfalls aus den pag. 1 angeführten Ursachen zu gering; ich glaube, dass es, wenn in beiden Gegenden die schwächsten Sterne gleichförmig berücksichtigt worden wären, etwa 1:4.5 bis 1:5 herausgekommen wäre, und es stellt sich also eine sehr starke Abnahme der Zahl der schwächern Sterne nach dem Pol der Milchstrasse hin deutlich heraus. Hierzu kommt noch, dass wir nach dem Nordpole der Milchstrasse hin so viele schwache Sterne mit starken eigenen Bewegungen finden, 1830 Gr. 7^m, LL. 21185 7^m, LL. 21258 8.9^m, Durchmusterung +15° No.

2620 8.9m mit den eigenen Bewegungen im Bogen des grössten Kreises von resp. 7".0, 4".7, 4".5, 2".5 und viele mit geringerer. Was also auch darauf hinzudeuten scheint, dass diese Sterne nicht wegen ihrer Entfernung, sondern wegen ihrer Kleinheit oder geringen Leuchtkraft so schwach erscheinen.

2.

Die Sicherheit der Beobachtungen ist in dieser zweiten Section nahe dieselbe wie in der ersten. Es liess sich dieses voraussetzen; denn wenn auch die Uebung der Beobachter im Laufe der Zeit eine grössere geworden war, und daher die Sicherheit hätte vermehrt werden sollen, so wurde der hierdurch erlangte Vortheil zum grossen Theile doch wieder dadurch aufgehoben, dass im Allgemeinen bedeutend mehr Sterne beobachtet worden sind, wie schon oben erwähnt worden, so dass auf jeden einzelnen geringere Zeit verwandt worden ist. Auch rührt gewiss ein bedeutender Theil der Unvollkommenheit von den Aufschreibern her, die fortwährend wechselten. Ich habe indess, um diese Voraussetzung, die ich bei der Zusammenstellung der Beobachtungen mir gebildet hatte, durch Zahlen zu prüfen, eine Reihe von Positionen auch aus dieser Section mit ihren genauer bestimmten Oertern verglichen. Ich habe dazu alle bei Bessel, Lalande oder in andern Catalogen vorkommenden oder am Bonner Meridiankreise bestimmten Sterne aus den geraden Stunden der Durchmusterungszone +37° ausgewählt, dabei aber, ebenso wie bei den Vergleichungen in der ersten Section alle Sterne ausgeschlossen, die in der Durchmusterung nur einmal vorkommen, so wie alle diejenigen, welche zwischen den einzelnen Bestimmungen solche Abweichungen zeigten, wegen deren sie, wenn ihr Dasein und ihre richtige Position nicht durch die früheren Bestimmungen sicher gestellt gewesen, untersucht worden wären. Bei dieser Gelegenheit untersuchte ich zugleich, ob sich in den Positionen constante Fehler fänden. Im Allgemeinen sind solche allerdings, bei der Art die Nullpunkte zu bestimmen, nicht gut möglich; da indessen zu dieser Bestimmung gewöhnlich die hellern Sterne angewandt worden sind, unter den jetzt untersuchten sich aber sehr viele schwächere, zum Theil Sterne 9.10m befinden, so vermuthete ich eigentlich, dass in Rectascension die negativen Fehler vorherrschen würden. Indess hat sich diese Vermuthung nur in sehr geringem Grade bestätigt, wie aus der folgenden Tabelle ersichtlich ist, in welcher die erste Columne die Angabe der betreffenden Stunde enthält, die zweite die mittlere Correction in AR., die dritte in Declination, die vierte die Zahl der verglichenen Sterne, die fünfte und sechste den mittlern aus der Summe der Fehler geschlossenen Fehler resp. in AR. und Decl., die siebente endlich die Zahl aller in der betreffenden Stunde vorkommenden Sterne.

I. u	II.	III.	IV.	V.	VI.	VII.
	s	′		″	′	
0	−0.24	+0.27	51	0.85	0.57	215
2	+0.34	−0.22	73	0.74	0.46	227
4	−0.08	−0.13	44	0.65	0.27	179
6	+0.44	−0.27	85	0.97	0.42	235
8	+0.12	−0.10	49	1.02	0.50	118
10	+0.55	−0.08	42	0.81	0.35	106
12	+0.64	+0.12	34	1.29	0.57	110
14	−0.27	+0.19	55	0.70	0.49	112
16	+0.06	+0.34	48	0.76	0.52	127
18	−0.05	+0.12	58	0.84	0.60	315
20	+0.08	+0.26	61	0.55	0.53	414
22	−0.28	+0.21	62	0.85	0.51	280
Mittel	+0.11	+0.04	662	0.82	0.48	

Die Correctionen im Mittel +0".11 und +0'.04 sind als verschwindend zu betrachten, ebenso die einzelnen Correctionen, die in Declination sich herausstellen. Aber die starken positiven Correctionen

in AR., die einzelne Stunden erfordern, scheinen doch etwas reelles zu haben; es sind dies solche, in denen keine Revisionszonen beobachtet sind, obgleich nicht alle solche; denn in 14^u und 16^u sind auch keine Revisionszonen beobachtet und in 4^u und 22^u nur kleine Stücke. Nach einem leichten Ueberschlage stellt sich die Correction in AR., wo Revisionszonen vorhanden sind, auf $-0''.08$, wo nicht, auf $+0''.18$ heraus. Ebenso scheinen die Revisionszonen auch auf die Verringerung der mittlern Fehler keinen so bedeutenden Einfluss geübt zu haben, als man hätte erwarten können, und es geht hieraus hervor, dass in den ärmern Zonen sorgfältiger beobachtet worden ist; man erhält sie nämlich für die Gegenden der Revisionszonen $0''.73$ und $0'.53$, für die übrigen $0''.87$ und $0'46$. Es scheint also durch die Revisionszonen keine bemerkenswerthe Ungleichförmigkeit in die Arbeit gekommen zu sein, sondern durch diese wirklich, wie es beabsichtigt war, die Ungleichförmigkeit aufgehoben zu sein, die aus dem so sehr verschiedenen Sternreichthum der einzelnen Gegenden des Himmels bei den Cometensucherzonen allein entstanden wäre.

Berechnet man nun aus den mittlern Fehlern die wahrscheinlichen, so erhält man $\varepsilon''(\alpha) = 0''.697$ $\varepsilon''(\alpha)\cos\delta = 0''.553$ und $\varepsilon''(\delta) = 0'.408$. Ich habe diese aber auch noch aus der Summe der Quadrate berechnet, und finde sie dann $\varepsilon''(\alpha) = 0''.748$, $\varepsilon''(\alpha)\cos\delta = 0''594$ und $\varepsilon''(\delta) = 0'.420$, alle etwas grösser als nach der frühern Rechnung. Es liegt dies an der auch sonst schon bei der Vergleichung der Theorie mit der Erfahrung bemerkten Erscheinung, dass in Wirklichkeit die grössern Fehler häufiger auftreten, als die Theorie gestattet. In unserm Falle ist die Vertheilung der Fehler folgendermassen gefunden worden:

Zwischen			in AR.		in Decl.	
			Theor.	Erf.	Theor.	Erf.
0.00	und	0.05	24	39	42	73
0.05	„	0.15	47	58	84	103
0.15	„	0.25	47	51	81	83
0.25	„	0.35	46	56	75	59
0.35	„	0.45	45	45	69	59
0.45	„	0.55	43	41	62	57
0.55	„	0.65	41	34	53	37
0.65	„	0.75	39	37	45	42
0.75	„	0.85	36	42	37	34
0.85	„	0.95	35	29	30	27
0.95	„	1.05	31	33	24	21
1.05	„	1.25	56	44	31	35
1.25	„	1.45	45	36	16	20
1.45	„	1.65	36	38	8	5
1.65	„	1.85	28	19	3	3
1.85	„	2.05	20	19	1	1
2.05	„	2.55	29	21	1	3
2.55	„	3.05	10	9		
3.05	„	3.55	3	2		
über		3.55	1	9		
			662	662	662	662

Das Ueberwiegen der sehr grossen Fehler tritt hier besonders in AR. mit grosser Entschiedenheit hervor, findet aber auch ganz ungezwungen seine Erklärung in zufälligen Versehen der Aufschreiber in der Secundenzahl *), auf die, als discontinuirliche Fehler erzeugend, die Theorie keine Rücksicht nimt und nehmen kann. Wenn nun hiernach allerdings die sehr grossen Fehler in unsern Positionen, besonders in den Rectascensionen sich häufiger finden werden, als sie den berechneten wahrscheinlichen Fehlern gemäss vorkommen sollten, so werden doch diese Fälle immer zu den sehr seltenen

*) Vergleiche Bessel fundamenta astronomiae p. 20.

gehören; es wird nach der Erfahrung bei 37°.5 Declination nur einmal unter 73 Fällen ein Fehler über 3″.5 vorkommen. Und dieser Uebelstand wird, wie ich glaube, dadurch vollständig compensirt, dass man in den meisten Fällen kleinere Fehler finden wird, als die Theorie es andeutet. Denn von den 662 Fehlern in AR. sind nach der Erfahrung 324 also fast die Hälfte unter 0″.7, 432 oder fast zwei Drittheile unter 1″.0, während die Theorie hierfür resp. 293 und 403 fordern würde; man würde nahe auf die Zahlen der Erfahrung kommen, wenn man die 9 grössten Fehler ausschliessen wollte, indem dann der wahrscheinliche Fehler auf 0″.681 herabkommen würde. Uebrigens darf doch auch nicht ausser Acht gelassen werden, dass manche Fehler in der Wirklichkeit kleiner sein dürften, als sie erscheinen, indem in den verglichenen genauern Positionen sich Versehn etwa von 1″ oder in der Declination der Besselschen Sterne von einer Revolution der Schraube = 0′.6, der Lalandischen von 1′ finden könnten, so wie auch eigene Bewegungen Einiges zur scheinbaren Vergrösserung der Fehler beigetragen haben werden. Auch aus der ersten Section habe ich neuerdings einige Vergleichungen angestellt, und zwar von solchen Sternen, die im Laufe der Arbeit am Bonner Meridiankreise vollständig bestimmt sind. Sie ergeben aus 280 Bestimmungen die wahrscheinlichen Fehler in AR. 0″.640, in Decl. 0′.404, also beide etwas kleiner, als ich sie früher aus 903 Bestimmungen gefunden hatte *), obgleich eigentlich der umgekehrte Fall hätte eintreten sollen, da die frühere Untersuchung sich auf Sterne zwischen 0° und 3° Declination bezogen hatte, während unter den jetzt verglichenen Sterne von allen Declinationen bis 20° vorkommen, und namentlich eine grosse Zahl schwächerer zwischen 10° und 14°, die eigens für diesen Zweck am Bonner Meridiankreise bestimmt wurden. Da nun die Zonen, auf welche die frühere Untersuchung sich bezog, zu den am frühesten beobachteten gehörten, so scheint es doch, als wenn die grössere Uebung die Sicherheit wenigstens etwas vermehrt hat. Uebrigens haben auch bei dieser Untersuchung sich die sehr grossen Fehler in AR. wieder häufiger gezeigt, als die Theorie es gestattet, nämlich 3 Fehler über 4″ statt eines kleinen Bruchtheiles.

Aus der Vergleichung der für etwa 1° und 37°.5 der Declination gefundenen wahrscheinlichen Fehler sieht man nun allerdings, dass die Unsicherheit der Rectascensionen nicht einfach im Verhältnisse der Secante der Declination zunimt, sondern gleichfalls aus einem constanten und einem variabeln Gliede zusammengesetzt ist, die Form und die Constanten dieses Verhältnisses zu bestimmen, reichen sie aber nicht hin. Eine solche Untersuchung muss daher auf eine spätere Zeit verschoben werden.

3.

Eine Vergleichung unsrer Grössen mit denen andrer Beobachter habe ich für diese Section nicht angestellt; ich glaube auch nicht, dass sie ein von der frühern bedeutend abweichendes Resultat gegeben haben würde, obgleich kleine Verschiedenheiten sich gewiss herausgestellt haben würden, und in der Natur der Sache liegen. Es ist nicht anzunehmen, dass wir trotz des besten Willens und aller angewandten Vorsicht im Laufe der Arbeit genau die gleiche Grössenschätzung sollten beibehalten haben; und eben so wenig ist dieses bei andern solchen Arbeiten vorauszusetzen; ja ich halte es für entschieden, dass Bessel wenigstens die schwächern Sterne in den spätern Zonen heller geschätzt hat, als in den frühern. Dafür haben sich nicht nur bei unsern Vergleichungen die sichersten Zeichen eingestellt, sondern es geht dies schon aus dem Umstande hervor, dass während in den frühern Zonen sich häufig Sterne als 9.10^m geschätzt vorfinden, diese in den spätern fast ganz fehlen, während doch eher anzunehmen ist, dass in diesen im Ganzen wegen der langsamern Bewegung ärmern häufig noch schwächere Sterne beobachtet sein werden, als in den dem Aequator nähern frühern.

*) Band 3. p. XXIII.

Eben so wenig habe ich eine genaue Abzählung derjenigen Sterne vorgenommen, die, obgleich sicher vorhanden, bei uns ohne Grund fehlen. Ich kann nur versichern, dass ihre Zahl noch geringer ist, als in der 1ten Section.

Als veränderlich erkannt sind im Bereiche des gegenwärtigen Verzeichnisses bei Gelegenheit der Durchmusterung folgende Sterne mit den Positionen für 1855

R Andromedae	0	16	24.5	+37	46	3
R Arietis	2	7	52.2	+24	22	7
R Bootis	14	30	47.8	+27	22	0
T Herculis	18	3	37.1	+30	59	7

Die Einrichtung des Verzeichnisses ist in allen Theilen der des frühern gleich, in der letzten Columne finden sich aber hin und wieder schon die neuen Buchstaben, G und J, deren ersterer auf den Catalog von Groombridge, der letztere auf den Radcliffe-Catalogue hinweist, und nur angesetzt ist, wo der betreffende Stern bei Groombridge nicht vorkommt, da bekanntlich alle von diesem beobachteten Sterne von Johnson wieder aufgesucht sind. Ausserdem bedeutet h in der Plejadengruppe, dass der betreffende Stern von Bessel am Königsberger Heliometer bestimmt ist*), und W in der Präsepe deutet die Bestimmung des Sterns durch Herrn Dr. Winnecke am Bonner Heliometer an **).

4.

Im vorigen Bande p. XXIV ist schon erwähnt worden, dass das Verzeichniss aller in den Besselschen Zonen zwischen 2° südlicher Declination und der nördlichen Gränze derselben bei Gelegenheit unsrer Durchmusterung als nöthig erkannten Verbesserungen zusammengestellt sei; ich gebe es nun auf den folgenden Blättern. Auf Vollständigkeit kann es keinen Anspruch machen, sondern es enthält nur die Verbesserungen der grössern Fehler, die durch die Durchmusterung entdeckt werden konnten, die der kleinern, nämlich von 1″ in der Zeit oder von einem Umgang der Schraube, nur da, wo die Vergleichung eines andern Catalogs sie vermuthen liess, und eine Bonner Meridianbeobachtung sie bestätigte. Jedoch bin ich in den Verbesserungen von 1″ sehr vorsichtig gewesen, und habe sie mit wenigen Ausnahmen nur da angewandt, wo entweder ein solcher Fehler bei einem nahen Sterne von Bessel selbst schon entdeckt worden war, oder eine Reihe von Sternen hinter einander diese Verbesserung unzweifelhaft erforderten. Wo Bessel einen Zweifel gegen eine Beobachtung gehegt, und dies angegeben hatte, habe ich den Stern von Neuem am Bonner Meridiankreise bestimmt, und danach den Zweifel gelöst. Nur sehr wenige solcher Sterne sind aus Mangel an Zeit noch nicht untersucht worden, und müssen also einem Nachtrage im nächsten Bande vorbehalten werden. Ich wünsche und hoffe, dass es nicht nöthig sein werde, diesem Nachtrage noch andere Aenderungen hinzuzufügen, wenigstens habe ich mich bemüht, die möglichste Vor- und Umsicht anzuwenden, und die schwierigern Stellen zu wiederholten Malen discutirt.

Eine sehr wesentliche Vervollkommnung hat das Verzeichniss aber dadurch erhalten, dass Herr Professor E. Luther die Gefälligkeit gehabt hat, sämmtliche zweifelhafte Stellen mit den Originalen selbst zu vergleichen, eine wahrlich nicht kleine Mühe, und eine Aufopferung an Zeit und Arbeit, für die unser verehrter Herr College nur in dem Bewusstsein eine Entschädigung finden kann, dass da-

*) Bessel Astronomische Untersuchungen I. p. 237.

**) Bulletin de l'académie des sciences de St. Pétersbourg T. II. p. 94. Das Verzeichniss selbst ist, so viel mir bekannt, noch nicht erschienen.

durch die wichtige Arbeit seines grossen Vorgängers wesentlich an Nutzbarkeit gewonnen hat. Er möge mir aber doch gestatten, auch meinen Dank hierfür ihm auszusprechen. Durch diese Vergleichung sind nicht nur fast ein Viertel sämmtlicher Fehler als reine Druck- oder Reductionsfehler erkannt, und also die neuen Lesarten zur Evidenz erhoben, sondern es ist an vielen andern Stellen durch die Auffindung von Verwirrung, Aenderungen schon im Original oder in demselben befindlichen in den Druck aber nicht übergegangenen Bemerkungen die Wahrscheinlichkeit der Verbesserungen auf einen viel höhern Grad erhoben worden.

Das Verzeichniss enthält nun alle Verbesserungen innerhalb der oben erwähnten Gränzen die mir bekannt geworden sind, also auch die von Bessel selbst theils in den Druckfehlerverzeichnissen, theils in dem grossen Verzeichnisse in der Einleitung zur XIV. Abtheilung der Königsberger Beobachtungen mitgetheilten, so wie die von andern Astronomen aufgefundenen, aber keine, die nicht durch unsre Durchmusterung bestätigt ist. Seine Einrichtung ist die folgende:

Es enthält in der ersten Columne die Nummer der Zone, in der zweiten die Durchgangszeit des Sterns, bei dem eine Verbesserung nöthig ist, so wie sie in den gedruckten Exemplaren der Bessel'schen Zonen vorkommt. Die sieben folgenden Columnen entsprechen der Reihe nach denselben Columnen der gedruckten Exemplare, und geben in denjenigen, bei denen eine Berichtigung nöthig war, die richtigen Zahlen, während die, welche im Druck richtige Zahlen enthalten, leer gelassen sind. Eine Ausnahme findet nur da statt, wo der Druck zwar die richtige Zahl enthielt, diese aber in der 7ten Columne als zweifelhaft bezeichnet war. In diesem Falle ist die richtige Zahl auch in unserm Verzeichnisse wiederholt. Die letzte Columne des letztern endlich enthält Anmerkungen, die folgende Bedeutung haben:

Fehler des Drucks ist geschrieben worden, wenn die Vergleichung des Originals, die Herr Professor Luther vorzunehmen die Güte gehabt hat, die berichtigte Zahl ergab, gleichviel ob die fehlerhafte durch einen Druck- oder Reductionsfehler entstanden war.

Abthl. XIV. zeigt an, dass der betreffende Fehler schon in dem Fehlerverzeichnisse angegeben ist, welches Bessel selbst in der Einleitung zur 14ten Abtheilung der Königsberger Beobachtungen pag. III. bis IX. bekannt gemacht hat, zugleich aber auch, dass unsre Beobachtungen dieselben bestätigt haben. Wo dies nicht der Fall gewesen, ist es in besondern Noten angegeben worden.

Abthl. XV. bis Abthl. XVII. bezieht sich auf ganz gleiche Weise auf die Fehlerverzeichnisse in den betreffenden Abtheilungen.

Bemerkung recht bedeutet, dass der Zweifel, der in der 7ten Columne des Drucks ausgesprochen ist, begründet,

Bemerkung verfällt, dass die angezweifelte Zahl richtig ist. Zuweilen beziehn sich diese beiden Ausdrücke auch auf Bemerkungen im Originale, die im Druck fehlen, und die dann in dem Fehlerverzeichnisse in der 9ten Columne nachgetragen sind.

Zweifel, die sich nicht durch die Annahme eines einfachen gewöhnlichen Fehlers lösen liessen, sind in den besondern dem Verzeichnisse folgenden Noten discutirt worden.

Das Verzeichniss enthält 2165 Nummern, und wie schon erwähnt, sind ausser den angeführten gewiss noch eine Menge Fehler von einer Schraubenrevolution unentdeckt geblieben. Diese grosse Zahl bei etwa 62000 untersuchten Beobachtungen kann auf den ersten Anblick auffallen; es ist aber zu berücksichtigen, dass etwa ein Viertel der ganzen Zahl Reduktions- oder Druckfehler sind, ein zweites Viertel aller Nummern dürfte aus durchgehenden Fehlern von einer Zeitminute oder einer Zeitsecunde bestehn, die alle einzeln aufgeführt sind, aber doch in jeder Reihe eigentlich nur einen Fehler bilden. Zieht man diese ab und rechnet ein paar hundert nicht entdeckte Fehler hinzu, so stellt sich heraus,

dass etwa unter 50 Beobachtungen nur ein Fehler vorgefallen ist, also wenn die Fehler auf beide Beobachter gleichmässig vertheilt werden, ein jeder derselben nur unter 100 Malen sich einmal versehn hat, und dies ist gewiss sehr gering, wenn man die Eile berücksichtigt, mit welcher die Beobachtungen angestellt wurden, und angestellt werden mussten, um den vorgesetzten Zweck zu erreichen und möglichst alle gut sichtbaren Sterne zu beobachten. Es geht daraus die grosse Sorgfalt hervor, die Bessel und seine Gehülfen bei den Beobachtungen angewandt haben. Einzelne Fehler sind ganz eigenthümlich, wie man aus den Anmerkungen sehn kann, manche, besonders in den Declinationen, der Art, dass es nicht gut möglich ist, das Rechte heraus zu finden, und wohl mögen hin und wieder solche kleinere Fehler unentdeckt geblieben sein, die die Beobachtungen fehlerhafter erscheinen lassen, als sie in Wirklichkeit gewesen sind: wenn nicht selten zwischen den Declinationen eines und desselben zweimal beobachteten Sterns Unterschiede von 5″, 6″ oder mehr Secunden vorkommen, so ist dies wo nicht etwa in der Annahme des Nullpunktes oder in der Berechnung der Hülfstafeln Fehler gemacht sind, nur durch Versehen in der Ablesung oder beim Niederschreiben zu erklären. Die grösseren, oft bis gegen eine Zeitsecunde wachsenden Unterschiede in zwei Rectascensionen desselben Sterns, die dann meistens bei einer Reihe auf einander folgender Sterne sich finden, sind aber einem andern Umstande zuzuschreiben. Der Königsberger Meridiankreis war fast genau contrebalancirt, und die Zapfen wurden nur durch eine schwache Feder in ihre Lager gedrückt. Es konnte daher bei dem Auf- und Niederbewegen des Fernrohrs leicht das eine oder das andre Ende der Axe aus der tiefsten Stelle des Lagers heraus geschoben und durch die Friction in dieser fehlerhaften Lage gehalten werden, wodurch sowohl Azimuth als Neigung sich ändern mussten. Dass solche Verschiebungen im horizontalen Sinne, da auch die Seitenfedern nur schwach waren, vorgekommen sind, gab sich nicht selten dadurch zu erkennen, dass das Microscop für die Ablesung der Declinationen undeutlich wurde. Wurde die Undeutlichkeit sehr merkbar, so wurde das Instrument zurückgedrückt. Wäre dies jedesmal angemerkt worden, so würde man in solchen Gegenden der Zone wahrscheinlich auch jedesmal Abweichungen in der Rectascension finden.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
1.	19 6 47.40	—	—	—	—	—	+ 1 16 21.0		Abthl. XIV.
	10 23.69	—	—	—	51	452	+ 0 2 42.2		″ ″
	24 10.70	—	—	—	28	1217	— 1 1 55.4		1.
	31 19.99	—	—	19 30 19.99	—	—	+ 0 13 58.0		Abthl. XIV.
	41 49.52	—	—	—	50	911	+ 0 2 19.6		″ ″
	20 12 13.49	—	—	20 13 13.49	—	—	—		Fehler des Drucks.
	41 59.14	—	—	42 59.14	—	—	—		″ ″ ″
	45 34.02	—	—	—	—	—	+ 0 46 41.9		″ ″ ″
	47 26.70	—	2	47 41.34	—	—	— 1 0 42.8		Secunde der Decl. Druckfehler.
	52 19.24	—	—	—	—	—	+ 0 25 59.1		Fehler des Drucks.
	21 17 47.79	—	—	21 15 47.79	—	—	—		Fehler des Drucks.
	33 58.99	—	—	—	—	—	—		
	33 59.52	—	—	—	43	570	— 0 20 37.3	Duplex	
2.	19 13 53.96	—	—	19 13 52.96	—	—	—		2.
	24 11.62	—	—	—	28	1210	— 1 1 59.1		1.
	41 10.71	—	—	42 10.71	—	—	—		Abthl. XIV.
	41 29.19	—	—	42 29.19	—	—	—		″ ″
	54 47.24	—	—	—	54	838	+ 0 13 53.3		″ ″
	20 15 30.14	—	—	20 15 26.14	—	—	—		Fehler des Drucks.
	25 52.52	—	—	—	—	—	— 1 3 26.2		″ ″ ″
	52 23.94	—	—	52 18.94	—	—	—		
3.	19 30 44.39	—	—	19 30 44.38	52	1171	+ 2 3 48.1		
	45 21.40	—	—	—	44	1089	+ 1 39 20.1		
4.	19 5 15.30	—	—	19 5 13.50	—	—	—		Bemerk. recht. 3.
	6 49.19	—	—	—	—	—	+ 1 16 19.2		Fehler des Drucks.
	24 5.84	—	—	—	54	1165	+ 2 12 45.4		
5.	19 46 32.30	—	—	19 46 42.30	—	—	—		Abthl. XIV.
	20 17 58.88	—	—	20 16 58.88	—	—	—		″ ″
	18 52.50	—	—	17 52.50	—	—	—		Fehler des Drucks.
6.	20 59 49.44	—	—	—	29	1190	+ 4 57 55.4		Abthl. XIV.
	21 43 1.94	—	—	21 44 1.94	—	—	—		Fehler des Drucks.
	48 10.20	—	—	48 20.20	—	—	—		
	52 59.40	—	—	52 49.40	—	—	—		
	22 2 5.40	—	—	22 1 55.40	—	—	—		Abthl. XIV.
	13 57.30	—	—	—	71	704	+ 7 1 9.2		
7.	19 3 1.51	—	—	—	70	1121	+ 5 0 31.0		Abthl. XIV.
	3 35.03	—	—	19 3 45.03	—	—	—		″ ″
	20 10 5.60	—	—	—	33	1100	+ 3 9 23.9		4.
8.	19 59 40.29	—	—	19 59 50.29	—	—	—		Fehler des Drucks.
	20 14 12.40	—	—	20 14 12.40	—	—	—		Bemerk. verfällt.
	15 23.50	—	—	15 22.50	—	—	—		Bemerk. recht nach Weisse.
9.	21 42 37.98	—	—	21 42 47.98	—	—	—		
	44 28.28	—	—	45 28.28	—	—	—		
	45 7.01	—	—	46 7.01	—	—	—		
10.	20 19 21.28	—	4	20 19 35.92	—	—	—		Bemerk. recht.
	21 20 56.86	—	—	21 19 56.86	—	—	—		Minute fehlt im Orig.
	27 10.06	—	3	26 55.30	—	—	—		
11.	21 33 29.95	—	2	21 34 8.98	—	—	—		Falscher Fad. u. Fehler von 10″.
	22 18 36.78	—	—	—	—	—	+ 3 49 38.2		Abthl. XIV.
12.	21 7 43.27	—	2	21 8 12.25	—	—	—		
	14 18.57	—	—	14 8.57	—	—	—		
13.	19 41 33.12	—	—	19 41 23.12	—	—	—		
	20 17 5.43	—	—	20 16 55.43	—	—	—		Fehler des Drucks.
	28 3.16	—	2	27 48.16	—	—	—		
	45 32.62	—	—	—	59	743	—		Abthl. XIV.
14.	22 10 38.85	—	—	22 10 48.85	—	—	—		Fehler des Drucks.
	14 22.76	—	—	14 12.76	—	—	—		
	53 10.78	—	—	—	—	—	+ 1 51 45.9		Abthl. XIV.
16.	20 19 23.90	—	—	20 19 18.90	—	—	—		
	24 28.06	—	2	24 57.02	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
18.	20 36 22.30	—	—	20 36 32.30	—	—	—		
	50 10.25	—	—	51 10.25	—	—	—		
	50 38.55	—	—	51 38.55	—	—	—		
	21 56 25.99	—	—	21 57 25.99	—	—	—		Fehler des Drucks.
	22 17 5.52	—	—	—	—	—	— 1 26 38.3		Abthl. XIV.
22.	20 58 58.43	—	—	20 58 48.43	—	—	—		
	59 49.48	—	—	—	58	1359	+16 25 40.2		Bemerk. verfällt.
	21 19 12.62	—	—	21 20 12.62	—	—	—		Abthl. XIV.
23.	22 39 28.80	—	—	22 39 18.80	—	—	—		
24.	21 9 52.60	—	—	—	60	1382	+14 31 47.5		
	13 23.31	—	—	—	49	1078	+13 57 3.6		Scalentheil fehlt im Orig.
25.	23 10 38.88	—	—	—	57	1211	+ 4 21 48.5		Bemerk. verfällt.
	45 38.41	—	—	23 45 28.41	—	—	—		Abthl. XIV.
	58 31.37	—	—	—	—	—	—	} Derselbe	
	58 31.66	—	—	—	—	—	—		
	0 0 27.26	—	4	0 0 41.75	—	—	—		
26.	22 40 9.20	—	—	22 39 59.20	—	—	—		
	50 15.11	—	—	—	64	1328	+12 43 33.5		Bemerk. verfällt.
	23 4 47.30	—	1	23 5 17.47	—	—	—		Bemerk. recht.
27.	2 1 41.59	—	—	2 1 51.59	—	—	—		Abthl. XIV.
	13 13.56	—	—	14 13.56	—	—	—		Abthl. XIV.
	20 2.85	—	—	20 6.85	—	—	—		Fehler des Drucks.
	26 2.71	—	—	—	—	—	—	} Derselbe	
	26 2.31	—	—	—	—	—	—		
	28 49.30	—	—	28 39.30	71	1400	+20 55 50.3		Bemerk. verfällt.
	29 35.60	—	—	—	46	1358	+22 11 4.6		" "
	30 51.63	—	—	—	60	1303	+21 29 23.4		" "
	32 12.08	—	—	—	47	1405	+22 7 48.6	} Derselbe	" "
	32 11.50	—	—	—	47	1402	+22 7 49.6		" "
	34 13.64	—	—	—	38	958	+22 37 21.0		Bemerk. recht.
	34 9.84	—	—	—	73	977	+20 52 14.5		Bemerk. recht.
	34 47.00	—	4	35 2.83	—	—	—		5.
	38 16.61	—	—	—	—	—	—	} Derselbe	
	38 16.30	—	—	—	—	—	—		
	3 21 18.80	—	—	3 21 48.50	—	—	—		Abthl. XIV. 33″ für 3.3″ gelesen.
28.	20 29 53.32	—	—	20 29 43.32	—	—	—		Fehler des Drucks.
	21 5 2.88	—	—	21 5 2.88	—	—	—		Bemerk. verfällt.
	22 0 49.30	—	—	22 0 39.30	—	—	—		
29.	23 59 57.70	—	—	—	59	1236	+ 9 32 39.8		
	0 11 19.42	—	—	0 11 9.42	—	—	—		
	41 23.79	—	5	41 8.74	—	—	—		Orig. Fad. V. 38.7 vergl. Note 5.
	43 33.48	—	—	43 23.48	—	—	—		Abthl. XIV.
	1 5 27.63	—	—	—	—	—	+ 9 51 22.1		" "
	24 32.83	—	—	1 24 22.83	—	—	—		Fehler des Drucks.
	29 41.22	—	3	29 26.70	—	—	—		
32.	0 57 17.41	—	—	0 56 17.41	—	—	—		Abthl. XIV.
	1 19 39.26	—	—	1 19 29.26	—	—	—		Fehler des Drucks.
	37 38.97	—	2	38 8.65	—	—	—		Abthl. XIV.
	43 36.51	—	—	43 26.51	—	—	—		" "
	2 7 44.29	—	4	2 7 59.47	—	—	—		" " Bemerk. recht.
33.	3 19 26.40	—	—	—	34	1310	+10 47 12.0		Bemerk. verfällt.
	25 35.20	—	—	3 25 55.20	—	—	—		Fehler des Drucks.
34.	22 25 38.20	—	—	22 25 28.20	—	—	—		
	45 6.06	—	—	45 6.06	—	—	—		Bemerk. verfällt.
	50 18.81	—	—	—	49	1277	—		Abthl. XIV.
35.	22 23 57.30	—	—	22 24 57.30	—	—	—		Fehler des Drucks.
	34 1.40	—	—	35 1.40	—	—	—		
	23 5 17.23	—	—	—	55	1557	—		Abthl. XIV.
	10 21.50	—	—	—	28	1474	+ 4 56 7.4		
36.	23 34 53.50	—	—	—	33	1444	+ 1 10 57.2		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
36.	0 5 13.00	—	—	—	60	1144	+ 2 30 14.6		
	35 48.94	—	—	—	27	1235	+ 0 51 45.7		
	1 0 41.80	—	—	—	53	1138	—		Abthl. XIV.
37.	3 4 56.85	—	—	—	49	1093	—		„ „
	36 19.73	—	—	3 36 9.73	—	—	—		Fehler des Drucks.
	43 2.32	—	—	43 12.32	—	—	—		
38.	0 31 33.70	—	—	0 32 33.70	—	—	—		
	32 32.10	—	—	33 32.10	—	—	—		
	53 28.04	—	—	—	—	—	+ 6 56 58.3		Abthl. XIV.
	1 6 13.32	—	—	1 6 3.32	—	—	—		Fehler des Drucks.
	27 9.60	—	—	—	69	1270	+ 6 56 20.3		Abthl. XIV.
39.	4 28 0.38	—	—	—	55	1176	+ 0 18 48.7		Bemerk. recht.
40.	0 56 57.30	—	—	0 56 7.30	—	—	—		Fehler des Drucks.
41.	4 31 19.10	—	—	4 31 19.40	—	—	—		Abthl. XIV.
	40 30.40	—	3	40 30.40	—	—	—		Bemerk. verfällt.
	43 34.10	—	—	43 44.10	—	—	—		
	5 37 52.79	—	—	5 37 52.59	—	—	—		Abthl. XIV.
42.	0 29 4.98	—	—	0 28 54.98	—	—	—		
	44 17.26	—	—	45 17.26	—	—	—		Fehler des Drucks.
45.	5 46 41.38	—	—	5 46 31.38	—	—	—		
	48 6.35	—	—	47 56.35	—	—	—		
	6 50 37.90	—	—	—	54	1335	+ 2 11 34.8		Bemerk. verfällt.
	7 6 38.94	—	—	7 6 48.94	—	—	—		
	31 25.37	—	—	21 25.37	—	—	—		Abthl. XIV.
	35 19.06	—	—	35 58.66	—	—	—		„ „ Orig. 4.4 statt 44″ gelesen.
	47 24.79	—	—	47 34.79	—	—	—		Fehler des Drucks.
	58 29.48	—	—	58 39.48	—	—	—		„ „ „
46.	1 48 21.54	—	—	—	—	—	— 2 54 20.5		„ „ „
	55 26.54	—	—	—	67	1379	—		Abthl. XIV.
	2 1 43.64	—	—	2 0 43.64	—	—	—		6.
	28 37.62	—	—	28 47.62	—	—	—		
	44 0.00	—	—	—	—	—	— 2 20 54.9		Fehler des Drucks.
47.	4 41 26.83	—	—	4 41 16.83	—	—	—		
	50 47.16	—	—	—	—	—	+ 4 19 4.3		Abthl. XIV.
	57 56.81	—	—	—	—	—	+ 4 43 27.8		„ „
	5 26 4.60	—	4	5 25 49.91	—	—	—		
	30 14.40	—	—	—	—	—	+ 3 35 55.4		Fehler des Drucks.
48.	5 25 54.80	—	—	—	—	—	+ 0 38 1.0		„ „ „
49.	7 53 32.62	—	—	7 53 42.62	—	—	—		„ „ „
50.	4 42 30.62	—	—	—	36	1104	— 1 17 35.3		
	5 15 54.50	—	—	—	54	969	—		Abthl. XIV.
	17 54.96	—	—	5 17 54.96	—	—	—		Bemerk. verfällt.
	22 0.62	—	4	5 21 31.70	—	—	—		
51.	4 8 33.92	—	—	4 8 23.92	—	—	—		Fehler des Drucks.
52.	8 2 47.48	—	3	8 2 33.10	—	—	—		
	18 18.52	—	—	18 28.52	—	—	—		
	30 40.60	—	—	—	48	1395	—		Abthl. XIV.
53.	4 7 47.86	—	—	4 7 47.79	68	1558	+ 9 3 47.5		
54.	4 1 55.60	—	—	4 0 55.60	—	—	—		Fehler des Drucks.
	2 17.91	—	—	1 17.91	—	—	—		„ „ „
	27 49.61	—	—	28 9.61	—	—	—		
	5 28 52.08	—	5	5 27 53.68	—	—	—		
55.	6 58 4.85	—	—	—	—	—	+ 10 20 12.6		Fehler des Drucks.
	7 39 13.50	—	—	7 39 19.50	—	—	—		„ „ „
	42 58.50	—	—	42 48.50	—	—	—		
	43 9.69	—	—	42 59.69	—	—	—		
	44 57.13	—	—	44 47.13	—	—	—		
	52 3.69	—	—	—	—	—	+ 9 35 4.0		Abthl. XIV.
	8 50 18.11	—	—	8 50 8.11	—	—	—		
56.	5 39 18.77	—	—	5 39 28.77	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
56.	5 42 37.03	—	—	5 42 27.03	—	—	—		
	47 19.23	—	—	—	70	1502	+13 3 18.3		Bemerk. recht.
	48 54.30	—	—	48 44.30	—	—	—		Abthl. XIV.
	58 27.27	—	—	—	71	1317	+13 5 15.1		
	6 6 41.84	—	—	—	52	1383	+12 8 37.6		
	7 0.87	—	—	—	—	—	+12 2 51.9		Fehler des Drucks.
	8 40.41	—	—	6 9 40.41	—	—	—		Abthl. XIV.
	10 23.40	—	—	10 13.40	—	—	—		
	13 33.05	—	—	—	28	1386	+10 56 38.7		
57.	8 7 11.25	—	—	8 7 1.25	—	—	—		
	7 15.04	—	—	7 5.04	—	—	—		
	34 20.30	—	—	—	56	1449	+ 8 21 0.0		
	34 34.30	—	—	—	56	1435	+ 8 20 55.2		
58.	5 41 47.90	—	—	—	—	—	+ 7 30 14.0		Abthl. XIV.
	50 54.40	—	—	5 50 54.30	—	—	—		" "
	52 33.50	—	—	52 43.50	—	—	—		
	55 29.30	—	—	55 19.30	—	—	—		=d. vorletzten Bemerk. recht.
	59 5.30	—	4	58 50.87	—	—	—		
	6 15 38.88	—	—	6 15 38.28	—	—	—		Abthl. XIV.
	16 34.82	—	—	16 44.82	—	—	—		
	20 2.00	—	—	19 42.00	—	—	—		
	42 27.99	—	—	42 27.99	—	—	—		Bemerk. verfällt.
	7 6 58.37	—	—	7 6 58.73	—	—	—		Abthl. XIV.
	7 53.41	—	—	—	52	1172	+ 8 7 24.8		Scalentheil fehlt im Orig.
59.	8 34 35.23	—	—	8 34 25.23	—	—	—		Abthl. XIV.
	46 46.41	—	—	46 46.51	—	—	—		" "
	51 54.33	—	—	—	56	1442	+ 6 20 58.0		
	9 12 41.80	—	—	—	71	1089	+ 7 3 57.5		
60.	5 45 11.52	—	—	—	58	1483	—		Abthl. XIV.
	6 9 34.68	—	—	6 9 32.68	—	—	—		7.
	12 16.83	—	—	12 11.83	—	—	—		
	15 24.70	—	—	15 14.70	—	—	—		
	16 41.11	—	—	—	70	1381	+11 2 36.4		
	17 26.20	—	4	17 11.69	—	—	—		
	28 3.72	—	—	—	70	1457	+11 3 2.4		
	58 10.85	—	—	58 10.81	27	1418	+ 8 53 49.1		
61.	5 37 8.82	—	—	5 38 8.82	—	—	—		Minute fehlt im Orig.
	56 14.11	—	—	56 4.11	—	—	—		
	58 53.40	—	—	58 43.40	—	—	—		Fehler des Drucks.
	6 8 8.79	—	—	6 8 3.79	—	—	—	AR—5″?	Bemerk. des Orig. recht.
	12 8.60	—	—	12 58.60	—	—	—		Fehler des Drucks.
	22 44.41	—	—	22 24.41	—	—	—		Abthl. XIV.
	31 7.02	—	—	31 12.02	—	—	—		
	40 24.91	—	—	40 24.81	—	—	—		Abthl. XIV.
	58 58.97	—	—	58 48.97	—	—	—		8.
62.	7 38 54.47	—	—	7 38 44.47	—	—	—		
	43 55.70	—	—	—	—	—	+13 53 32.2		
	46 59.48	—	—	46 55.48	—	—	—		9.
	8 18 22.64	—	—	—	—	—	+14 48 22.4		Fehler des Drucks.
	42 19.45 17.65	—	—	8 42 17.55	—	—	—		10.
63.	6 57 43.80	—	4	6 57 29.16	—	—	—		
	7 16 26.70	—	—	7 16 16.70	—	—	—		Fehler des Drucks.
	34 18.66	—	—	34 8.66	—	—	—		
64.	9 48 58.69	—	—	—	30	1410	+ 6 58 35.1		
	10 22 5.59	—	—	10 22 10.59	—	—	—		
	28 11.00	—	—	28 21.00	—	—	—		Fehler des Drucks.
	41 59.81	—	—	42 59.81	—	—	—		
	42 24.79	—	—	43 24.79	—	—	—		
	43 14.36	—	—	44 14.36	—	—	—		
	59 19.40	—	—	59 9.40	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
65.	7 58 40.31	—	—	7 58 30.31	—	—	—		
	8 19 34.23	—	—	8 19 24.23	—	—	—		
	9 20 20.86	—	—	—	—	—	—	} Duplex	
	20 21.80	—	—	—	—	—	—		
	30 57.50	5	—	—	—	—	—		Fehler des Drucks.
66.	11 8 59.69	—	—	11 8 58.69	—	—	—		Abthl. XIV.
	15 33.00	—	4	15 18.10	—	—	—		
68.	9 54 41.20	—	—	9 53 41.20	—	—	—		Abthl. XIV.
	55 15.36	—	—	54 15.36	—	—	—		" "
	55 15.67	—	—	54 15.67	—	—	—		" "
	11 51 8.39	—	—	11 50 58.39	—	—	—		
69.	9 47 43.90	—	—	9 47 42.90	—	—	—		Abthl. XIV.
	56 23.20	—	—	57 23.20	—	—	—		Fehler des Drucks.
	58 14.20	—	—	58 28.59	—	—	—		11.
	10 33 28.46	—	—	—	—	—	+ 6 54 50.4		Abthl. XIV.
70.	12 57 47.72	—	—	12 56 47.72	—	—	—		
	13 23 49.36	—	—	13 22 49.36	—	—	—		" "
71.	9 35 47.70	—	—	—	37	1287	+ 12 38 14.5		Fehler des Drucks.
	37 48.57	—	2	9 38 18.05	—	—	—		
	45 51.06	—	—	—	—	—	—	} Duplex 5″	Abthl. XIV.
	45 51.07	—	—	—	—	—	+ 11 31 5.1		Abthl. XIV.
	10 19 55.21	—	—	10 19 59.21	—	—	—		Fehler des Drucks.
	38 43.37	—	—	38 42.37	—	—	—		Abthl. XIV.
73.	11 51 40.42	—	—	—	30	1270	+ 12 59 3.8		Scalentheil fehlt im Orig.
	57 29.85	—	3	11 57 14.80	—	—	—		Abthl. XIV.
74.	13 6 11.94	—	—	13 7 11.94	—	—	—		Minute fehlt im Orig.
	19 51.93	—	—	19 41.93	—	—	—		Fehler des Drucks.
	20 33.10	—	—	—	40	1375	— 0 27 21.9		Bemerk. verfällt.
	26 49.20	—	2	27 3.83	—	—	—		
	51 31.93	—	—	51 31.93	—	—	—		Bemerk. verfällt.
	56 2.34	—	—	56 2.34	—	—	—		Bemerk. verfällt.
75.	11 53 15.41	—	—	11 54 15.41	—	—	—		Minute fehlt im Orig.
76.	14 37 33.81	—	—	14 37 23.81	—	—	—		
77.	13 18 51.10	—	—	13 18 54.10	—	—	—		Fehler des Drucks.
	44 14.25	—	—	44 4.25	—	—	—		
	45 19.29	—	—	45 9.29	—	—	—		
79.	13 44 39.20	—	—	13 44 29.20	—	—	—		
82.	13 44 21.69	—	—	13 43 21.69	—	—	—		Fehler des Drucks.
	14 5 5.31	—	3	14 4 51.00	—	—	—		
	11 47.35	—	—	10 47.35	—	—	—		Abthl. XIV.
	38 2.40	—	—	—	—	—	+ 2 48 15.5		Abthl. XIV.
	47 17.19	—	—	47 7.19	—	—	—		" "
	47 7.93	—	—	46 57.93	—	—	—		12.
	54 53.69	—	—	54 43.69	—	—	—		
83.	13 50 47.60	—	—	—	58	1296	+ 5 34 56.1		
	58 21.96	—	—	13 59 21.96	—	—	—		
	58 20.77	—	—	59 20.77	—	—	—		} 13.
	14 13 41.96	8	—	—	—	—	—		Abthl. XIV.
	14 42.58	—	—	14 14 44.58	—	—	—		" "
84.	15 41 57.78	—	—	15 42 57.78	—	—	—		" "
85.	14 6 17.26	—	—	14 6 7.26	—	—	—		Abthl. XIV.
86.	13 54 27.66	—	—	13 54 17.66	—	—	—		
	15 16 18.56	—	—	15 16 28.56	—	—	—		
87.	14 3 1.10	—	—	14 3 4.10	—	—	—		Fehler des Drucks.
	27 56.40	—	—	—	—	—	+ 11 59 59.8		Abthl. XIV.
88.	15 18 16.99	—	—	15 18 20.99	—	—	—		14.
	36 27.56	—	—	—	66	1182	— 0 48 20.8		
	53 46.17	—	—	54 0.69	—	—	—		Abthl. XIV.
	54 50.28	—	—	53 50.28	—	—	—		" "
	16 4 56.96	—	2	16 5 25.87	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
88.	16 12 15.70	—	—	—	28	1326	+ 1 4 50.0		
	36 5.40	—	—	—	55	1179	— 0 15 19.8		
89.	16 34 24.87	—	—	16 34 24.37	—	—	—		Abthl. XIV.
	41 30.00	—	—	—	29	1037	+ 5 3 16.8		15.
	15 13.60	—	—	50 13.60	—	—	—		Fehler des Drucks.
90.	15 58 2.57	—	—	15 58 12.57	—	—	—		
	16 8 5.22	—	—	16 8 55.22	—	—	—		Abthl. XIV.
	39 9.73	—	—	—	41	971	+ 1 33 22.0		Bemerk. verfällt.
91.	17 26 45.33	—	2	17 27 0.33	—	—	—		16.
	53 55.30	—	—	—	25	1238	+12 46 51.8		
	18 0 48.30	—	—	18 0 38.30	—	—	—		Abthl. XIV.
92.	16 23 1.36	—	—	—	—	—	+ 5 50 26.3		" "
	17 15 13.37	—	—	17 15 23.37	—	—	—		
	27 28.82	—	2.3	27 43.37	—	—	—		
	41 6.20	—	2	41 20.92	—	—	—		
93.	16 20 30.77	—	—	16 20 30.79	49	1443	+ 7 59 58.9		
	32 41.13	—	—	33 41.13	—	—	—		Fehler des Drucks.
	34 0.65	—	—	35 0.62	29	1240	+ 6 58 49.7		17.
	42 47.20	—	2	43 1.98	—	—	—		18.
	17 11 16.55	—	—	17 11 6.55	—	—	—		
	24 41.37	—	—	—	—	—	+ 7 52 6.0		Abthl. XIV.
	37 32.69	—	—	38 32.69	—	—	—		
	38 7.57	—	—	39 7.57	—	—	—		Minute fehlt im Orig.
	55 47.75	—	—	55 37.75	—	—	—		Fehler des Drucks.
94.	16 48 0.22	—	—	16 47 50.22	—	—	—		
	51 23.00	—	4	51 8.51	—	—	—		
	17 4 15.10	—	—	—	—	—	+ 9 5 18.4		Abthl. XIV.
	7 32.11	—	—	17 7 42.11	—	—	—		Fehler des Drucks.
	11 54.70	—	—	10 54.70	—	—	—		
	38 0.42	—	—	37 50.42	—	—	—		" " "
	47 2.16	—	—	—	46	1470	+ 9 51 8.1		
95.	17 26 35.87	—	2.3	17 26 50.32	—	—	—		
	41 19.84	—	—	42 19.84	—	—	—		
	41 50.04	—	—	42 50.04	—	—	—		
	42 28.04	—	—	43 28.04	—	—	—		
	42 47.30	—	—	43 47.30	50	1280	+ 0 2 5.2		19.
	43 9.41	—	—	44 9.41	—	—	—		
	43 49.82	—	—	44 49.82	—	—	—		
	44 59.94	—	—	45 59.94	—	—	—		
	54 11.61	—	—	54 11.61	—	—	—		Bemerk. verfällt.
	18 11 18.14	—	—	—	34	1189	— 0 46 26.0		
	43 57.89	—	—	18 43 54.89	—	—	—		Fehler des Drucks.
	45 44.30	—	—	45 54.30	—	—	—		Abthl. XIV.
	57 49.51	—	—	—	—	—	+ 0 28 24.5		Bemerk. Abthl. XIV. verfällt.
96.	17 8 49.30	—	—	17 8 39.30	—	—	—		
	37 8.65	—	—	37 8.64	41	1464	+ 1 33 5.6		Scalentheil fehlt im Orig.
	18 0 12.50	—	—	18 1 12.50	—	—	—		Abthl. XIV.
	45 20.80	—	—	—	66	1261	+ 2 46 56.3		
97.	19 39 18.75	—	—	—	—	—	+11 49 10.9		Abthl. XIV.
	20 7 16.50	—	3	20 7 1.50	—	—	—		
99.	18 18 23.73	—	2	18 18 52.64	—	—	—		Abthl. XIV. Bemerk. recht.
	29 0.02	—	—	—	—	—	— 2 42 31.2		Abthl. XIV.
	19 11 2.93	—	—	19 11 12.93	—	—	—		
	14 54.73	—	2	14 39.94	—	—	—		
	19 17.40	—	—	—	72	1276	— 0 52 2.6	Derselbe	Bemerk. recht.
	19 31.93	—	5	49 17.41	—	—	—		
106.	23 20 25.50	—	—	—	—	—	+24 40 38.3		Abthl. XIV.
	23 47.28	—	3	23 24 2.30	—	—	—		
	24 53.05	—	—	25 53.05	—	—	—		
	25 27.26	—	—	26 17.26	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
106.	23 25 39.11	—	—	23 26 39.11	—	—	—		
	26 21.70	—	—	27 21.70	—	—	—		
107.	21 9 5.70	—	—	21 8 57.00	—	—	—		Fehler des Drucks.
108.	21 9 13.19	—	—	21 9 13.10	—	—	—		Abthl. XIV.
	26 1.42	—	—	—	41	1242	+10 25 32.3		„ „
	22 4 13.88	—	—	22 4 3.88	—	—	—		
	40 11.50	—	—	—	58	1355	+ 9 33 53.5		
	50 44.42	—	—	—	46	886	+10 12 34.3		Bemerk. verfällt.
	58 8.10	—	—	—	32	1316	+10 52 6.9	Scale 32?	„ richtig.
	58 8.35	—	—	—	—	—	—	Derselbe	
	23 24 53.30	—	—	—	55	1348	+ 9 42 55.9		
	27 40.47	—	—	—	—	—	+10 39 54.2		Abthl. XIV.
110.	21 39 15.08	—	—	21 40 15.08	—	—	—		
	39 37.35	—	—	40 37.35	—	—	—		
	40 3.97	—	—	41 3.97	—	—	—		
	40 19.35	—	—	41 19.35	—	—	—		
	40 43.87	—	—	41 43.87	—	—	—		
	40 42.20	—	—	41 42.20	—	—	—		
	41 24.09	—	—	42 24.09	—	—	—		
	22 17 24.55	—	—	22 17 14.55	—	—	—		Abthl. XIV.
111.	0 47 42.10	—	—	0 47 22.10	—	—	—		Fehler des Drucks.
	51 51.30	—	—	—	—	—	+ 8 48 31.1		Abthl. XIV. 20.
	1 36 35.50	—	—	1 36 55.50	—	—	—		Abthl. XIV.
113.	0 35 55.30	—	—	0 36 5.30	—	—	—		
	40 19.76	—	—	40 9.76	—	—	—		
115.	21 54 47.33	—	—	21 55 47.33	—	—	—		
	54 47.78	—	—	55 47.78	—	—	—		} 21.
	55 50.50	—	—	56 50.50	—	—	—		
	22 3 43.20	—	—	22 3 33.20	—	—	—		22.
	4 35.76	—	2	5 5.58	—	—	—		23.
116.	23 59 53.55	—	1	0 0 51.88	—	—	—	=d. zweitfolg.	
	0 12 20.33	—	—	12 10.33	—	—	—		
	1 27 55.00	—	—	1 28 55.00	—	—	—		Fehler des Drucks.
118.	2 31 42.61	—	—	2 32 42.61	—	—	—		
	32 3.71	—	—	33 3.71	—	—	—		
	43 16.16	—	—	—	—	—	+ 5 46 1.7		Abthl. XIV.
	57 10.84	—	—	57 10.83	56	1259	+ 6 19 47.8		
	3 18 54.30	—	—	3 18 44.30	—	—	—		
	18 39.02	—	—	18 29.02	—	—	—		
	20 21.31	—	—	20 21.40	33	1559	+ 5 12 30.2		
	41 3.60	—	—	41 3.60	—	—	—		Bemerk. verfällt.
	45 25.69	—	4	45 40.03	—	—	—		
	52 42.50	—	—	53 42.50	—	—	—		Fehler des Drucks.
120.	23 48 30.17	—	—	23 48 38.17	—	—	—		Abthl. XIV.
	53 54.66	—	—	53 54.65	53	1208	+ 8 10 25.4		
121.	3 2 15.94	8	—	—	—	—	—		Abthl. XIV.
	4 0.67	—	3	3 4 15.20	—	—	—		Bemerk. recht.
	5 31.87	—	—	5 37.87	—	—	—		Abthl. XIV.
	8 50.96	—	—	8 56.96	—	—	—		Fehler des Drucks.
	24 38.10	—	—	25 38.10	—	—	—		„ „ „
	41 56.71	—	—	41 46.71	—	—	—		
	52 51.40	—	—	51 51.40	—	—	—		
	55 23.86	—	—	54 43.86	—	—	—		24.
124.	0 44 43.88	—	1	0 45 43.36	—	—	—		
	47 4.13	—	—	48 4.13	—	—	—		Fehler des Drucks.
	1 11 4.67	—	—	1 11 4.67	—	—	—		Bemerk. verfällt nach Weisse.
	11 27.48	—	—	11 27.48	—	—	—		„ „ „ „
	12 1.96	—	—	12 0.96	—	—	—		Bemerk. recht nach Weisse.
	13 13.40	—	—	13 12.40	—	—	—		„ „ „ „
	13 40.49	—	—	13 50.49	—	—	—		Fehler des Drucks.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
126.	2 5 46.13	—	—	—	29	1192	+10 58 20.1		Scalentheil fehlt im Orig.
	34 16.71	—	—	2 34 18.71	—	—	—		Bem. recht nach Weisse u. Durchmust.
130.	1 43 30.91	—	—	1 43 40.91	—	—	—		Fehler des Drucks.
	52 39.64	—	—	—	25	1336	+ 3 13 1.1		Bemerk. verfällt.
	2 10 11.19	—	—	2 10 11.22	35	1070	+ 2 44 32.3		
	27 35.40	—	—	27 45.40	—	—	—		Fehler des Drucks.
131.	3 56 49.34	—	—	3 56 49.34	—	—	—		Das ? nicht im Orig.
	4 24 52.82	—	—	4 24 42.82	—	—	—		Abthl. XIV.
	5 7 48.75	—	—	5 7 58.75	—	—	—		
	8 56.23	—	—	9 6.23	—	—	—		25.
	9 26.89	—	—	10 16.89	—	—	—		Minute fehlt im Orig.
133.	3 31 9.20	—	4	3 30 54.20	—	—	—		
135.	4 18 23.20	—	—	4 18 13.20	—	—	—		
	21 2.70	—	—	—	50	1540	—		Abthl. XIV.
	37 32.94	—	—	57 32.94	—	—	—		Fehler des Drucks.
136.	0 44 32.06	—	—	0 45 32.06	—	—	—		
	45 33.29	—	—	46 33.29	—	—	—		
	45 14.55	—	—	46 14.55	—	—	—		
	45 46.66	—	—	46 46.66	—	—	—		
	46 5.76	—	—	47 5.76	—	—	—		
	47 0.21	—	—	48 0.21	—	—	—		
	56 45.80	—	—	56 35.80	—	—	—		
137.	4 33 33.30	—	—	4 33 43.30	—	—	—		
	41 53.60	—	—	42 3.60	—	—	—		
	46 43.26	—	—	56 43.26	—	—	—		Fehler des Drucks.
138.	2 24 57.29	—	—	2 24 47.29	—	—	—		
	3 8 46.50	—	—	3 9 46.50	—	—	—		
	9 26.26	—	—	10 26.26	—	—	—		
	17 44.52	—	—	18 4.52	—	—	—		
141.	2 42 1.70	—	4	2 41 46.78	—	—	—		
	52 13.80	—	—	51 13.80	—	—	—		Fehler des Drucks.
	3 29 9.30	—	—	—	—	—	+13 9 —		
	36 7.20	—	—	3 37 7.20	—	—	—		
	36 13.55	—	—	37 13.55	—	—	—		
	36 35.46	—	—	37 35.46	—	—	—		Bemerk. recht.
	51 1.58	—	4	51 16.28	—	—	—		
143.	5 4 36.49	—	—	5 5 36.49	—	—	—		Fehler des Drucks.
	4 36.20	—	—	5 36.20	—	—	—		
	11 13.78	—	—	11 12.78	—	—	—		Bemerk. recht.
	29 43.46	—	—	29 33.46	—	—	—		
144.	6 25 54.06	—	—	—	27	1157	+ 2 52 1.6		Bemerk. verfällt.
	27 16.64	—	5	6 27 2.31	—	—	—		
	7 10 14.47	—	—	7 10 11.47	—	—	—		Abthl. XIV.
	13 59.50	—	—	—	68	1085	+ 4 54 37.0		
	29 38.30	—	—	30 38.30	—	—	—		Fehler des Drucks.
145.	9 5 17.11	8	—	—	—	—	—		Abthl. XIV.
	6 20.84	—	—	9 6 30.84	—	—	—		
	54 41.79	—	—	—	—	—	—	Duplex 5″	Abthl. XIV. } Fehler des Drucks.
	55 40.98	—	—	—	—	—	—		Bemerk. verfällt }
146.	5 35 19.09	—	—	—	—	—	—		26.
	58 28.35	—	—	—	—	—	+13 59 51.3		Abthl. XIV.
	7 2 2.59	—	—	7 2 2.49	69	1594	+14 57 25.9		
147.	5 58 18.24	—	—	—	—	—	—		} 27.
	6 2 5.30	—	—	—	—	—	—		
	4 2.40	—	—	—	38	1298	—		Abthl. XIV.
	24 2.29	—	2	6 24 31.44	—	—	—		
	26 54.94	—	—	27 54.94	—	—	—		Fehler des Drucks.
148.	7 5 3.70	—	—	—	37	1487	+11 23 50.7		Bemerk. verfällt.
	22 48.30	—	—	—	28	1593	+10 57 26.9		
	25 29.48	—	—	7 25 29.40	—	—	—		Abthl. XIV.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
149.	9 36 4.94	—	—	9 37 4.94	—	—	—		Abthl. XIV.
	36 55.95	—	—	37 55.95	—	—	—		″ ″
	36 40.27	—	—	37 40.27	—	—	—		″ ″
	36 56.43	—	—	37 56.43	—	—	—		″ ″
	10 27 34.46	—	5	10 27 19.57	—	—	—		
150.	6 28 35.33	—	—	6 28 25.33	—	—	—		Fehler des Drucks.
	31 5.30	—	—	—	—	—	+ 1 7 29.5		″ ″ ″
	31 58.62	—	—	—	—	—	+ 1 8 10.1		″ ″ ″
	50 50.30	8	—	—	—	—	—		Abthl. XIV.
151.	8 26 18.22	—	—	—	64	815	+ 3 21 54.3		
152.	10 28 18.02	—	—	10 29 18.02	—	—	—		
	28 18.68	—	—	29 18.68	—	—	—		
	11 2 59.00	—	4	11 2 44.36	—	—	—		
	28 22.30	—	3	28 22.30	—	—	—		Bemerk. verfällt.
	38 29.20	—	—	38 29.20	—	—	—		″ ″
	58 42.77	—	—	58 41.77	—	—	—		Bemerk. recht.
	12 3 12.01	—	—	—	46	1247	+ 2 10 25.2		Abthl. XIV.
153.	8 31 10.40	—	—	—	—	—	+ 2 33 37.3		″ ″
	35 54.79	—	2	8 35 40.51	—	—	—		
	9 2 26.96	—	—	—	69	1190	+ 1 1 46.2		
154.	11 38 25.25	—	—	11 38 35.25	—	—	—		Fehler des Drucks.
	12 3 10.55	—	—	12 3 0.55	—	—	—		Abthl. XIV.
	3 58.74	—	—	3 48.74	—	—	—		″ ″
	8 32.05	—	—	8 42.05	—	—	—		Fehler des Drucks.
	16 35.50	—	—	—	—	—	+ 10 44 44.4		Abthl. XIV.
155.	10 0 54.60	—	—	10 1 54.60	—	—	—		
	8 0.61	—	—	9 0.61	—	—	—		
	10 14.43	—	—	—	—	—	+ 10 11 9.6		Fehler des Drucks.
	10 6.64	—	—	—	—	—	+ 9 54 8.6		
	11 4.73	—	—	—	—	—	+ 9 49 19.9		
	27 37.99	—	4	10 27 8.68	—	—	—		
156.	9 4 36.24	—	—	—	57	1432	—		Abthl. XIV.
	11 36.82	—	—	9 11 51.64	—	—	—		28.
	43 6.04	—	—	45 6.04	—	—	—		Fehler des Drucks.
	57 11.20	—	—	57 14.20	—	—	—		″ ″ ″
	10 10 14.57	—	—	10 11 14.57	—	—	—		
	18 40.11	—	—	18 50.11	—	—	—		Fehler des Drucks.
157.	11 42 7.50	—	—	11 41 7.50	—	—	—		
158.	9 1 55.50	—	—	9 1 57.50	—	—	—		29.
	3 36.56	—	—	3 37.56	—	—	—		Bemerk. recht.
	41 16.66	—	5	41 1.88	—	—	—		
	41 38.56	—	2	42 7.71	—	—	—		Fehler des Drucks.
	10 32 34.79	—	—	10 32 24.79	—	—	—	AR 10″?	Bemerk. recht.
	33 40.88	—	—	—	—	—	— 1 13 47.3		Abthl. XIV.
	39 48.46	—	—	40 48.46	—	—	—		
	41 19.87	—	—	42 19.87	—	—	—		
	42 32.91	—	—	43 32.91	—	—	—		30.
	11 5 27.91	—	—	—	55	1358	— 0 17 14.0		
	16 50.17	—	—	—	51	1356	—		Abthl. XIV.
159.	10 52 50.73	—	—	10 53 0.73	—	—	—		Fehler des Drucks.
	11 8 19.24	—	—	11 9 19.24	—	—	—		
	10 39.84	—	—	11 39.84	—	—	—		Fehler des Drucks.
	10 30.63	—	—	11 30.63	—	—	—		″ ″ ″
	12 26 14.23	—	—	12 26 4.23	—	—	—		Abthl. XIV.
	35 33.62	—	—	35 23.62	—	—	—		
	45 23.20	—	—	45 23.20	—	—	—		Bemerk. verfällt. 31.
160.	13 51 33.88	—	—	13 51 33.88	—	—	—		Bemerk. verfällt.
	53 26.83	—	—	53 36.83	—	—	—		Fehler des Drucks.
	14 6 30.50	—	—	14 7 30.50	—	—	—	AR 1′?	Bemerk. recht.
	49 19.26	—	—	49 29.26	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
160.	15 1 24.63	—	—	15 1 18.63	—	—	—		32.
161.	12 37 21.52	—	—	12 38 21.52	—	—	—		Abthl. XIV.
	38 1.62	—	—	39 1.62	—	—	—		" "
	38 58.51	—	—	39 58.51	—	—	—		" "
	59 17.97	—	—	59 17.91	—	—	+13 9		
	13 26 29.21	—	—	—	67	1382	+12 53 17.9		33.
	38 41.19	—	—	—	46	1367	+11 50 12.8		
162.	14 22 57.15	—	—	—	44	1384	—		Abthl. XIV.
	37 10.30	—	—	—	—	—	+ 8 55 36.8		
	15 53 10.20	—	—	—	37	1790	+ 9 22 38.7		Abthl. XIV.
	16 16 15.59	—	—	—	64	1412	+10 41 29.7		
	32 57.23	—	—	—	—	—	—		34.
163.	14 36 58.90	—	3	14 36 44.20	—	—	—		
	15 22 43.47	—	—	15 21 33.47	—	—	—		Fehler des Drucks.
	27 8.30	—	—	—	63	1223	+ 6 40 27.3		
	47 18.30	—	—	—	—	—	+ 4 52 28.4		
	16 7 43.40	—	—	16 8 43.40	—	—	—		Abthl. XIV.
	8 39.81	—	—	9 39.81	—	—	—		
	8 52.03	—	—	9 52.03	—	—	—		
	9 21.43	—	—	10 21.43	—	—	—		
	10 0.22	—	—	11 0.22	—	—	—		
	9 39.36	—	—	10 39.36	—	—	—		
	10 3.25	—	—	11 3.25	—	—	—		Abthl. XIV.
	10 49.90	—	—	11 49.90	—	—	—		
164.	14 33 33.70	—	—	—	58	1390	+12 26 22.4		
	39 55.06	—	—	14 40 55.06	—	—	—		
	40 34.60	—	—	41 34.60	—	—	—		Bemerk. recht.
	15 0 9.81	—	—	59 59.81	—	—	—		
	10 33.10	—	—	—	—	—	—	Dupl. 10″!	Bemerk. recht
	10 33.30	—	—	—	—	—	—		= Str. dupl. 1931.
	22 15.80	—	—	15 22 15.80	—	—	—		Bemerk. verfällt.
	22 20.54	—	—	22 20.54	—	—	—		
	16 9 15.00	—	4	16 9 0.16	—	—	—		Orig. ursprünglich Fad. IV.
	15 49.34	—	—	15 48.34	—	—	—		Bemerk. recht.
	18 42.80	—	—	—	37	1618	+11 24 40.2		
	31 40.20	—	—	—	62	1633	—		Abthl. XIV.
165.	15 15 25.64	—	—	15 15 11.20	—	—	—		
	20 18.20	—	—	—	—	—	+ 7 33 18.0		Fehler des Drucks.
	30 19.30	—	—	30 19.30	—	—	—		Bemerk. verfällt.
	38 23.38	—	—	38 33.38	—	—	—		Fehler des Drucks.
	51 59.98	—	—	51 57.98	—	—	—		Abthl. XIV.
166.	15 19 41.77	—	—	—	—	—	+ 3 29 36.4		" "
	20 17.07	—	—	—	—	—	+ 4 4 59.2		" "
	34 18.64	—	—	15 34 28.64	—	—	—		
	52 27.50	—	—	—	68	1442	+ 4 56 41.5		Abthl. XIV.
	16 21 49.30	—	—	16 21 39.30	—	—	—		
	40 23.53	—	—	40 33.53	—	—	—		Fehler des Drucks.
168.	15 39 34.80	—	—	15 38 34.80	—	—	—		Abthl. XIV.
	45 24.06	—	—	—	44	1691	+13 46 4.1		
	49 31.52	—	—	—	68	1368	+14 56 13.9		Abthl. XIV.
	16 3 57.14	—	—	16 2 57.14	—	—	—		Abthl. XIV.
172.	16 34 9.16	—	—	—	52	1229	+11 52 21.7		
	42 33.86	—	—	—	62	936	+11 24 2.2		
	44 45.45	—	—	44 45.48	58	1374	+11 33 31.9		Abthl. XIV.
	45 22.35	—	—	45 22.36	57	1322	+11 36 49.8		
	17 16 26.70	—	—	17 16 56.70	—	—	—		35." "
173.	18 8 59.40	—	—	18 8 58.40	—	—	—		
	9 33.51	—	—	9 32.51	—	—	—		36.
	9 56.81	—	—	9 55.81	—	—	—		
	10 15.51	—	—	10 14.51	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
173.	18 10 19.56	—	—	18 10 18.56	—	—	—		36.
174.	17 23 58.22	—	—	17 22 58.22	—	—	—		Fehler des Drucks.
	30 31.52	—	—	30 30.52	—	—	—		Bemerk. recht.
	56 28.40	—	—	—	53	1420	+ 3 48 3.2		
	18 11 37.93	—	—	18 12 37.93	—	—	—		Fehler des Drucks.
	44 28.70	—	—	—	52	1244	+ 3 52 3.6		
	19 5 22.50	—	—	—	50	986	+ 3 59 32.0		Abthl. XIV.
175.	17 40 33.65	—	—	—	—	—	+11 47 10.4		„ „
	51 58.29	—	—	17 51 48.29	—	—	—		
	57 39.50	—	—	57 29.50	—	—	—		Fehler des Drucks.
	18 44 57.11	—	—	18 43 57.11	—	—	—		Abthl. XIV.
	58 58.53	—	—	58 53.53	—	—	—		Fehler des Drucks.
176.	17 32 37.73	—	—	—	71	1719	+11 7 5.6		37.
	38 30.37	—	—	—	53	1316	+10 10 48.1		
	18 26 4.70	—	—	—	57	1383	+10 23 10.9		Abthl. XIV.
177.	17 57 42.85	—	4	17 57 57.56	—	—	—		Abthl. XIV. Verbesserung richtig.
	18 15 22.60	—	—	—	—	—	—		38.
178.	18 7 7.13	—	—	18 8 7.13	—	—	—		Abthl. XIV.
	34 7.20	—	—	33 57.20	—	—	—		„ „
	34 48.08	—	—	34 38.08	—	—	—		„ „
	19 21 4.00	—	4	19 20 49.33	—	—	—		
180.	18 16 44.30	—	—	—	—	—	+ 5 19 16.2		Fehler des Drucks.
	17 17.70	—	—	—	—	—	+ 5 36 59.5		„ „ „
	36 32.73	—	—	18 36 32.73	—	—	—		Bemerk. verfällt.
	19 6 8.60	—	4	19 6 23.31	44	1207	+ 5 43 7.4		39.
	9 52.01	—	—	9 51.01	—	—	—		Bemerk. recht.
	23 13.50	—	—	23 18.50	—	—	—		
	23 30.48	—	—	24 30.48	—	—	—		Abthl. XIV.
181.	18 7 27.76	—	—	18 7 26.76	—	—	—		Bemerk. recht.
	9 58.59	—	—	—	45	1372	+13 43 55.1		
	22 37.20	—	—	—	66	1671	+14 48.37.2		
	37 22.03	—	—	37 32.03	—	—	—		Abthl. XIV.
	37 47.42	—	—	37 57.42	—	—	—		„ „
	39 24.44	—	—	39 14.44	—	—	—		40.
	40 24.40	—	—	—	75	1239	+15 13 9.7		
	41 49.40	—	—	41 48.40	63	1345	+14 37 45.8		Bemerk. recht.
	19 20 3.67	—	—	—	—	—	+13 39 43.6		Abthl. XIV.
	25 49.72	—	—	19 25 49.68	57	1535	+14 20 50.7		„ „
182.	17 58 58.76	—	—	—	40	1696	+ 9 33 46.9		41.
	18 5 21.10	—	—	—	65	1573	+10 48 4.9		Abthl. XIV. 42.
	49 9.22	—	—	18 40 9.22	—	—	—		Abthl. XIV.
	43 19.54	—	—	43 39.54	—	—	—		„ „
190.	19 19 34.36	—	—	19 19 29.36	—	—	—		Bemerk. recht.
191.	21 57 52.46	—	—	21 57 55.46	—	—	—	=d. vorigen	Orig. undeutlich.
	23 12 57.40	—	—	23 12 51.40	—	—	—		Fehler des Drucks.
	57 16.06	—	—	—	—	—	+15 39 59.2		Abthl. XIV.
192.	19 57 40.30	—	—	—	53	886	+15 51 4.7		Bemerk. verfällt.
	21 32 26.60	—	—	21 32 20.60	—	—	—		Abthl. XIV.
	48 37.70	—	4	48 22.43	—	—	—		
193.	20 38 14.15	—	—	—	57	1293	+17 36 44.9		Bemerk. verfällt.
	41 42.30	—	—	20 41 32.30	—	—	—		
	21 3 5.32	—	—	21 4 5.32	—	—	—		Fehler des Drucks.
	10 39.10	—	—	10 39.17	—	—	+17 17 —		
194.	22 19 14.86	—	—	22 19 34.86	—	—	—		
	24 17.64	—	—	—	64	1392	+18 43 56.9		
	35 2.20	—	—	34 52.20	—	—	—		
	35 19.20	—	—	35 9.20	—	—	—		
	35 35.10	—	—	35 25.10	—	—	—		
	44 12.73	—	3	43 57.00	—	—	—		Bemerk. recht.
	23 3 1.00	—	—	23 4 1.00	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
194.	23 8 50.00	—	—	—	70	1386	+19 1 55.0		Bemerk. recht.
	20 59.29	—	—	—	41	1393	+17 34 57.2		
	22 59.77	—	—	23 23 59.77	—	—	—	=d. folgenden	43.
	28 39.55	—	—	28 39.54	50	1854	+18 4 34.5		Scalentheil fehlt im Orig.
	30 31.60	—	—	31 31.60	—	—	—		
	30 42.98	—	—	31 42.98	—	—	—		
	30 43.81	—	—	31 43.81	—	—	—		
	31 43.60	—	—	32 43.60	—	—	—		
	32 57.71	—	—	33 57.71	—	—	—		
195.	20 2 26.57	—	—	—	—	—	+20 23 48.9		Fehler des Drucks.
	34 32.97	—	—	20 34 32.97	—	—	—		Bemerk. verfällt.
	39 7.31	—	—	—	40	1022	+19 29 56.2		
	44 33.40	—	—	44 43.40	—	—	—		
196.	21 33 58.47	—	—	21 33 58.56	59	1944	+20 32 13.4		
	37 47.32	—	—	38 47.32	—	—	—		Fehler des Drucks.
	43 36.87	—	—	43 46.87	—	—	—		
	45 32.86	—	—	45 52.86	—	—	—		„ „ „
	49 38.49	—	—	48 38.49	—	—	—		„ „ „
	22 17 15.00	—	—	—	—	—	+19 12 42.3		Minute im Orig. fälschlich corrigirt.
198.	20 33 15.54	—	—	20 33 15.73	37	1273	+21 19 19.7		Fehler des Drucks.
	37 38.13	—	—	37 38.13	—	—	—		44.
	56 45.98	—	—	—	47	1503	+21 50 38.2		Bemerk. verfällt.
	57 44.40	—	—	—	66	1615	+22 48 16.4		„ „
	21 1 47.58	—	—	—	—	—	+21 29 15.3		Fehler des Drucks.
	55 49.50	—	—	21 54 49.50	—	—	—		
200.	0 38 12.07	—	—	0 39 12.07	—	—	—		Abthl. XIV.
	39 14.50	—	—	39 14.50	—	—	—		Abthl. XIV fälschlich corrigirt.
	40 34.29	—	—	40 34.29	—	—	—		„ „ „ „
	40 48.07	—	—	41 48.07	—	—	—		
	40 50.25	—	—	41 50.25	54	1235	+20 13 5.5		Bemerk. verfällt.
	55 59.50	—	4	55 44.01	—	—	—		
	1 2 36.40	—	—	1 2 35.40	—	—	—		Abthl. XIV.
	2 35.70	—	—	2 36.70	—	—	—		
	8 31.14	—	—	8 31.16	50	1190	+20 0 50.2		„ „
	35 46.23	—	—	35 56.23	—	—	—		
	44 32.33	—	—	45 32.33	—	—	—		
208.	7 15 32.10	—	—	—	57	1363	— 0 23 43.0		Fehler des Drucks.
	44 58.31	—	—	7 44 48.31	—	—	—		
	46 59.07	—	5	46 44.28	—	—	—		
	8 36 4.70	—	—	8 36 4.70	—	—	—		Bemerk. verfällt.
	36 32.81	—	—	36 32.81	—	—	—		Bemerk. verfällt.
	44 58.97	—	—	45 6.97	—	—	—		
	45 8.97	—	—	45 16.97	—	—	—	+8″?	Bemerk. recht. 45.
	52 8.80	—	—	—	49	1170	+ 0 1 23.2		
209.	2 42 39.90	—	—	2 42 29.90	—	—	—		Fehler des Drucks.
228.	12 36 16.03	—	—	12 36 26.03	—	—	—		Abthl. XIV.
	36 38.42	—	—	36 48.42	—	—	—		„ „
	13 3 34.12	—	—	13 3 34.10	64	972	+13 17 18.4		
232.	13 21 18.07	—	—	13 21 17.57	—	—	—		46.
236.	10 50 41.40	—	—	—	49	1408	+ 7 58 50.8		Bemerk. verfällt.
	11 21 12.30	—	—	11 21 22.30	—	—	—		
237.	11 14 13.99	—	—	11 14 33.99	—	—	—		Fehler des Drucks.
	40 32.00	—	—	41 32.00	—	—	—		„ „ „
	41 28.31	—	—	41 38.31	—	—	—		
	49 31.53	—	—	49 31.53	—	—	—		Bemerk. verfällt.
	12 3 20.90	—	—	—	56	1716	+ 8 21 38.8		Abthl. XIV.
	10 18.77	—	—	—	—	—	+ 9 3 20.7		Fehler des Drucks.
	39 37.24	—	—	12 40 37.24	—	—	—		Abthl. XIV.
	39 49.50	—	—	40 49.50	—	—	—		
	40 4.34	—	—	41 4.34	—	—	—		„ „
									„ „

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
237.	12 40 43.26	—	—	12 41 43.26	—	—	—		Abthl. XIV.
273.	8 0 13.34	—	—	8 0 13.35	69	1244	+15 1 52.2		47.
	21 12.73	—	1	21 28.03	—	—	—		
	9 12 13.80	—	—	9 12 8.40	—	—	—		Fehler des Drucks.
	13 55.64	—	—	12 55.64	—	—	—		„ „ „
	14 23.77	—	—	13 23.77	—	—	—		„ „ „
	19 37.50	—	—	20 37.50	—	—	—		Abthl. XIV.
	32 34.01	—	—	32 33.85	27	1616	+17 5 44.7		
274.	8 32 54.08	—	—	8 32 54.08	—	—	—		Bemerk. verfällt.
	9 7 7.79	—	—	9 8 7.79	—	—	—		Fehler des Drucks.
	27 14.16	—	—	27 24.16	—	—	—		Fehler des Drucks.
	50 34.35	—	—	—	43	1556	+18 18 7.8		
	54 5.09	—	—	54 15.09	—	—	—		Fehler des Drucks.
275.	9 9 29.60	—	—	9 10 29.60	—	—	—		„ „ „
	33 39.30	—	—	33 29.30	—	—	—		
	55 27.47	—	—	—	—	—	—	=d. zweitvorhg.	Abthl. XIV.
	56 27.35	—	—	—	—	—	—		Bemerk. verfällt.
276.	6 4 21.65	—	—	6 4 21.63	63	1087	+15 20 46.8		
	14 40.59	—	—	—	—	—	+15 54 52.3		Fehler des Drucks.
	19 7.15	—	—	19 7.13	58	1324	+15 34 25.5		
	34 43.20	—	—	—	50	1255	+15 58 49.2		Bemerk. verfällt.
	7 13 5.29	—	—	—	—	—	+16 19 30.0		Fehler des Drucks.
	23 22.36	—	—	7 23 32.36	—	—	—		„ „ „
	23 37.36	—	—	24 37.36	—	—	—		„ „ „
277.	8 30 13.01	—	—	8 40 13.01	—	—	—		„ „ „
278.	8 1 43.70	—	—	—	—	—	+21 34 49.4		„ „ „
	7 50.20	—	—	—	63	1247	+21 19 54.3		Bemerk. verfällt.
	31 12.00	—	—	—	—	—	+22 53 28.2		Abthl. XIV.
	56 28.99	—	—	—	35	1381	+22 43 8.3		
	9 5 33.00	—	4	9 5 17.35	—	—	—		
	13 15.20	—	—	13 50.20	—	—	—		Abthl. XIV.
	18 50.85	—	—	18 50.86	60	1282	+21 28 42.3		
	31 51.30	—	—	30 51.30	—	—	—		
279.	6 48 25.94	—	—	—	64	938	+21 18 39.2		Bemerk. verfällt.
	53 3.20	—	—	—	56	1045	+21 42 2.5		
	7 22 6.20	—	—	7 22 6.15	54	1243	+21 46 54.6		
	48 28.91	—	—	48 33.91	—	—	—		
	50 39.73	—	3	50 55.50	—	—	—		
280.	9 43 58.22	—	—	9 43 53.22	—	—	—		
	44 16.12	—	—	44 11.12	—	—	—		
	45 22.79	—	—	45 17.79	—	—	—		
	44 52.88	—	—	44 47.88	—	—	—		
	46 52.37	—	—	46 52.33	58	1279	+15 34 43.0		
	51 59.82	—	—	—	—	—	—		48.
	10 6 3.65	—	—	10 5 3.65	—	—	—		Minute im Orig. undeutlich.
281.	6 56 45.88	9	—	—	—	—	—		Abthl. XIV.
	57 11.57	8.9	—	—	—	—	—		„ „
	58 34.69	—	—	—	67	1170	+17 8 22.0		
	58 34.83	—	—	—	67	1194	+17 8 13.8		
	7 19 34.00	—	—	—	—	—	+17 44 46.7		Fehler des Drucks.
	46 38.10	—	—	7 46 38.40	—	—	—		Abthl. XIV.
	53 51.40	—	—	—	—	—	+17 8 22.7		Fehler des Drucks.
	58 36.94	—	—	—	—	—	+17 48 38.5		Abthl. XIV.
	8 2 4.90	—	—	—	—	—	—		
	2 5.17	—	—	—	—	—	—	} Dupl. 8″	Bemerk. im Druck eine Zeile zu hoch.
	16 30.09	—	—	8 16 20.09	—	—	—		
282.	11 30 8.05	—	—	11 29 8.05	—	—	—		
	34 55.97	—	—	34 56.02	75	1489	+17 18 1.2		49.
	37 59.29	—	—	—	49	1293	+15 58 54.3		
	45 6.36	—	—	45 6.45	67	1375	+16 53 22.3		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u , "			u , "			° , "		
282.	12 16 30.48	—	—	12 6 30.48	—	—	—		
283.	11 45 3.32	—	—	—	29	1557	+15 0 23.3		
	ohne AR.	—	—	12 5 46—	—	—	—		
	12 7 18.70	—	—	—	—	—	+15 52 55.9		Fehler des Drucks.
	26 23.33	—	2	26 8.05	—	—	—		Bemerk. recht.
	26 7.75	—	4	26 7.75	—	—	—	Derselbe	Bemerk. verfällt.
	26 56.40	—	—	—	—	—	+16 36 —	Derselbe	
	26 56.36	—	—	—	—	—	—		
284.	15 26 9.40	—	—	15 28 9.40	—	—	—		50.
	28 22.46	—	3.4	28 37.63	65	1104	+16 42 48.5		18 Serpentis.
	36 2.49	—	—	—	—	—	—		51.
	38 34.28	—	—	38 33.28	—	—	—		
	52 34.72	—	—	—	—	—	—	Derselbe	Abthl. XIV.
	52 35.20	—	—	—	—	—	—		
	16 2 57.13	—	—	16 2 57.17	—	—	+16 5.5		52.
	10 42.27	—	—	—	—	—	+15 59 2.1		Fehler des Drucks.
	21 38.50	—	—	20 38.50	48	807	+15 50 7.4		Minute fehlt im Orig.
	25 32.54	—	—	—	—	—	+15 31 24.0		Fehler des Drucks.
	40 23.62	—	3	40 8.30	—	—	—		
285.	10 42 57.00	—	—	—	70	1281	+17 1 46.4		Abthl. XIV.
	54 35.39	—	—	—	—	—	—		53.
	54 33.34	—	—	—	—	—	—		
	11 3 39.28	—	—	—	72	1659	+17 9 55.4		
	15 1.89	—	—	11 15 21.89	—	—	—		
	15 29.85	—	—	—	28	1194	+14 55 16.7		
	19 15.03	—	—	20 15.03	—	—	—		Fehler des Drucks.
	26 42.09	—	—	—	—	—	—		54.
	41 25.07	—	—	40 25.07	—	—	—		Bemerk. recht.
	50 9.67	—	—	—	—	—	+16 14 57.1		Fehler des Drucks.
	12 3 14.29	—	—	12 3 14.29	—	—	—		Bemerk. verfällt.
	4 35.64	—	2.3	7 20.54	—	—	—		55.
	4 17.17	—	—	7 17.17	—	—	—		
	7 3.41	—	—	9 3.41	—	—	—		
	8 27.46	—	3.5	9 12.18	—	—	—		
286.	15 39 19.55	—	2.3	15 38 34.70	—	—	—		Bemerk. verfällt. 56.
	59 18.43	—	—	—	—	—	+17 0 45.2		Abthl. XIV.
	16 20 18.37	—	—	16 20 18.37	—	—	—		Bemerk. verfällt.
	17 3 13.99	—	—	17 3 13.98	31	2056	+15 9 12.3		
	10 59.76	—	—	10 59.72	30	1868	+15 5 8.1		
	21 13.47	—	—	22 13.47	—	—	—		
	37 21.44	—	—	—	64	1733	+16 46 22.0		
287.	15 7 5.51	—	—	—	77	1581	—		Abthl. XIV.
	26 58.18	—	—	15 26 57.18	—	—	—		Fehler des Drucks.
	47 4.36	—	—	48 4.36	—	—	—		
288.	13 40 5.34	—	—	13 41 5.34	—	—	—		
	14 34 59.05	—	2	14 35 29.39	—	—	—		
	36 13.29	—	1	36 28.25	—	—	—		
	37 3.46	—	—	37 2.46	—	—	—		Bemerk. recht.
289.	13 57 40.20	—	—	13 57 44.20	—	—	—		Fehler des Drucks.
	14 3 33.65	—	—	14 2 33.65	—	—	—		
	25 40.20	—	—	26 40.20	—	—	—		Minute fehlt im Orig.
	58 8.06	—	—	58 8.06	—	—	—		Bemerk. verfällt.
	15 0 56.40	—	—	15 1 56.40	—	—	—		
	2 12.40	—	—	3 12.40	—	—	—		
290.	13 36 24.13	—	—	13 37 24.13	—	—	—		Minute fehlt im Orig.
	14 22 4.88	—	3	14 21 49.20	—	—	—		
	33 31.20	—	—	—	—	—	+19 14 44.6		Fehler des Drucks.
	39 39.40	—	—	39 30.40	—	—	—		Bemerk. recht.
	51 22.80	—	—	52 22.80	—	—	—	+1"?	" "
	53 23.35	—	—	54 23.35	—	—	—		57.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
290.	14 54 7.36	—	—	14 55 7.36	—	—	—		
	54 31.80	—	—	55 31.80	—	—	—		
	54 52.70	—	—	55 52.70	—	—	—		57.
	55 35.19	—	—	56 35.19	—	—	—		
291.	15 10 37.34	—	—	—	41	1292	+15 33 53.9		Bemerk. verfällt.
	39 55.48	—	4	15 40 10.47	—	—	—		
292.	14 34 49.85	—	—	—	51	1589	+22 5 37.3		Bemerk. recht.
	15 43 37.73	—	—	15 43 27.73	—	—	—		Fehler des Drucks.
293.	16 7 37.01	—	—	—	64	1514	+18 44 9.7		Bemerk. recht.
294.	15 6 22.65	—	—	—	37	1075	+20 38 7.6		" "
	39 3.20	—	—	—	53	986	+19 50 48.1		
	45 11.63	—	—	15 46 11.63	—	—	—		58.
	50 14.40	—	—	—	39	801	—		Abthl. XIV.
295.	15 42 37.30	—	—	—	32	1063	+20 53 10.3		
	50 57.98	—	—	—	29	810	+21 3 37.0		Bemerk. verfällt.
	16 10 49.34	—	—	16 10 27.34	—	—	—		Fehler des Drucks.
	25 8.49	—	—	—	70	1021	—		Abthl. XIV.
	30 49.20	—	—	—	50	1092	+19 59 0.3		
	31 22.31	—	—	31 28.31	—	—	—		Abthl. XIV.
	38 54.40	—	—	—	39	870	+20 33 16.4		
	59 0.20	—	—	59 4.20	—	—	—		Abthl. XIV.
	17 0 33.50	—	—	17 0 43.50	—	—	—		Fehler des Drucks.
296.	16 1 36.99	—	—	—	56	1200	+22 18 24.3		59.
	9 35.10	—	—	16 10 35.10	—	—	+21 29 23.5		Beides Fehler des Drucks.
	21 30.79	—	—	22 30.79	—	—	—		
	22 32.85	—	—	23 32.85	—	—	—		
	23 23.44	—	—	24 24.44	—	—	—		60.
	34 0.40	—	—	—	37	1384	—		Abthl. XIV.
	35 55.73	—	—	—	48	1352	+21 55 16.2		
	17 23 55.97	—	—	17 23 25.97	—	—	—		Fehler des Drucks.
	26 34.60	—	—	27 34.60	—	—	—		
297.	16 46 31.14	—	—	16 46 31.22	—	—	+19 2 43.4		Fehler des Drucks.
	52 9.44	—	—	52 59.44	—	—	—		" " "
	17 42 16.16	—	3	17 42 0.70	—	—	—		
	55 53.24	—	—	—	—	—	—		61,
298.	17 8 44.60	—	—	17 10 44.60	—	—	—		
	9 15.60	—	—	11 15.60	—	—	—		
	22 45.30	—	—	—	—	—	+18 28 44.9		Fehler des Drucks.
	46 2.66	—	—	—	61	1600	+19 36 1.6		
299.	17 51 43.06	—	—	17 51 53.06	—	—	—		Fehler des Drucks.
	18 7 51.31	—	—	18 7 51.26	49	1742	+22 0 51.0		
	18 1.67	—	—	17 59.67	—	—	—		Bemerk. recht.
	28 31.20	—	—	—	—	—	+20 54 58.2		Fehler des Drucks.
	47 28.55	—	5	—	—	—	—		Abthl. XIV.
	48 13.30	—	—	48 18.30	—	—	—		
	58 44.42	—	—	58 45.42	—	—	—		Fehler des Drucks.
300.	17 12 9.25	—	—	—	—	—	—	Derselbe	
	12 9.33	—	—	—	—	—	—		
	17 34.19	—	—	—	75	860	+17 13 48.9		Bemerk. verfällt.
	18 4.00	—	—	17 19 4.00	—	—	—		
	18 27.60	—	—	19 27.60	—	—	—		
	18 35.76	—	—	19 35.76	—	—	+16 8 6.8		Fehler des Drucks.
	18 54.10	—	—	19 54.10	—	—	—		
	19 48.38	—	—	20 48.38	—	—	—		
	20 13.28	—	—	21 13.28	—	—	—		
	20 50.80	—	—	21 50.80	—	—	—		
	21 12.12	—	—	22 12.12	—	—	—		
	21 35.40	—	—	22 35.40	—	—	—		
	21 36.02	—	—	22 36.02	—	—	—		
	22 42.20	—	—	23 42.20	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
300.	17 23 37.31	—	—	17 24 37.31	—	—	—		62.
	46 33.18	—	—	46 32.18	—	—	—		Fehler des Drucks.
	59 5.50	—	—	59 5.50	—	—	—		Bemerk. verfällt.
	18 3 10.17	—	4	18 3 10.17	—	—	—		63.
	4 28.18	—	5	4 13.18	—	—	—		
	8 40.10	—	—	9 40.10	—	—	—		64.
	20 53.31	—	—	—	39	1762	+15 30 56.7		Bemerk. recht.
	33 17.27	—	—	34 17.27	—	—	—		Fehler des Drucks.
301.	20 4 10.07	—	—	20 4 9.07	—	—	—		Bemerk. recht.
	5 34.05	—	—	—	—	—	+23 43 45.1		Abthl. XIV.
	18 10.20	—	—	19 10.20	—	—	—		
302.	19 2 19.71	—	—	19 2 29.71	—	—	—		Fehler des Drucks.
	4 19.65	—	—	4 29.65	—	—	—		″ ″ ″
	5 39.59	—	—	5 39.62	69	1378	+22 55 47.4		
	11 18.73	—	—	11 28.73	—	—	—		65.
	11 57.59	—	—	12 7.59	—	—	—		
	12 16.11	—	—	12 26.11	—	—	—	+10″ Zeit?	Bemerk. recht.
	22 22.20	—	—	22 52.20	—	—	—		Fehler des Drucks.
	29 17.17	—	—	29 27.60	58	1526	+22 23 37.9		66.
	31 9.09	—	—	31 19.09	—	—	—		Fehler des Drucks.
	51 6.66	9	—	—	—	—	—		Abthl. XIV.
	52 47.50	—	—	52 47.50	—	—	—		Bemerk. verfällt.
	20 3 33.07	—	3	20 3 17.30	—	—	—		
	3 59.77	—	—	3 59.83	49	1574	+21 56 54.2		
	11 21.70	—	2	11 53.28	—	—	—		
	15 52.99	—	—	15 45.99	—	—	—		67.
	31 35.40	—	—	—	38	1246	+21 22 2.3		Bemerk. verfällt.
303.	19 29 39.63	—	—	19 29 29.63	—	—	—		Fehler des Drucks.
	38 10.80	—	—	38 0.80	—	—	—		
	38 8.44	—	—	37 58.44	—	—	—		
	38 58.97	—	—	38 48.97	—	—	—		
	45 33.01	—	—	—	—	—	+25 34 5.0		Fehler des Drucks.
	20 0 35.94	—	—	—	61	1852	+26 37 29.4		Bemerk. verfällt.
	5 45.30	—	—	—	78	1635	+27 27 15.3		
	11 27.30	—	—	20 11 27.30	—	—	—		Bemerk. verfällt, fehlt auch im Orig.
	32 35.36	—	—	32 35.36	—	—	—		″ ″ ″ ″ ″ ″
	54 29.73	—	—	54 28.73	—	—	—		Bemerk. recht.
	21 3 43.68	—	—	21 3 42.68	—	—	—		″
305.	19 28 21.15	—	—	—	—	—	+26 51 58.3		Abthl. XIV.″
	20 8 38.50	—	—	—	—	—	—	Derselbe	
	8 38.65	—	—	—	—	—	—		
	17 57.20	—	—	20 17 52.20	—	—	—		
	21 0 3.96	—	—	20 59 3.96	—	—	—		
306.	19 55 50.32	—	—	19 55 47.32	—	—	—		68.
	20 19 47.60	—	—	—	27	1065	+31 11 6.9		69.
	31 21.20	—	—	20 31 41.20	—	—	—		70.
	45 30.95	—	—	46 7.95	—	—	—		Fehler des Drucks.
	58 3.25	—	—	58 3.25	—	—	—		Bemerk. verfällt.
	21 15 7.30	—	—	21 15 7.39	68	1614	+29 4 59.3		
	28 38.61	—	—	—	59	1656	+29 31 44.9		
308.	18 51 40.20	—	—	—	68	1155	+15 7 39.3		
	19 27 9.59	8	—	—	—	—	—		Abthl. XIV.
309.	22 19 53.22	—	—	22 19 53.15	53	1435	+25 51 0.5		Bemerk. recht.
	28 32.07	—	—	28 42.07	—	—	—		Fehler des Drucks.
310.	20 7 26.16	—	—	20 7 16.16	—	—	—		
	56 41.94	—	3	56 25.20	—	—	—		
	21 37 25.81	—	—	21 37 24.81	—	—	—		Bemerk. st. +1″? lies —1″?
	22 1 34.09	—	—	22 1 34.03	53	1591	+32 20 9.1		Abthl. XIV.
311.	18 50 35.20	—	—	—	—	—	+14 54 54.0		Fehler des Drucks.
	19 16 24.77	—	—	—	—	—	+16 48 42.7		Abthl. XIV.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
311.	19 25 57.57	—	—	—	68	1342	—		Abthl. XIV.
	43 5.77	—	5	19 42 50.90	—	—	—		
312.	20 1 45.29	—	—	20 1 55.29	—	—	—		
	1 58.20	—	—	2 8.20	—	—	—		
	1 58.40	—	—	2 8.40	—	—	—		
	4 7.20	—	—	—	—	—	+33 28 8.4		Abthl. XIV.
	21 23 19.90	—	—	—	—	—	+37 7 9.2		Fehler des Drucks.
	48 56.45	—	—	21 48 56.45	—	—	—		Bemerk. verfällt.
313.	20 8 17.49	—	—	—	73	1435	—		Abthl. XIV.
	58 4.10	—	3	20 58 22.20	—	—	—		
	21 30 55.00	—	—	21 30 54.79	58	1346	+35 36 31.8		
314.	20 6 17.17	—	—	20 6 17.25	46	1264	+38 12 59.7		
	20 16.20	—	—	—	26	1745	+39 10 15.2		
	55 18.68	—	—	—	52	1473	—		Abthl. XIV.
	55 32.65	—	—	—	—	—	+37 58 55.3		Fehler des Drucks.
	55 42.90	—	—	—	—	—	+37 28 36.8		" " "
	21 16 12.04	—	—	21 16 20.04	—	—	—		71.
	23 33.35	—	—	23 23.35	—	—	—		72.
	26 9.41	—	—	27 9.41	—	—	—		Fehler des Drucks.
	32 1.80	—	—	—	—	—	—	} Derselbe	
	32 2.07	—	—	—	—	—	—		
	52 59.92	—	—	—	—	—	+38 25 14.7		Abthl. XIV.
315.	20 45 5.65	—	—	20 45 5.58	44	1556	+24 16 27.3		
	21 0 12.90	—	—	21 0 12.90	—	—	—		Bemerk. verfällt.
316.	21 1 16.60	—	—	21 1 26.60	—	—	—		Fehler des Drucks.
	47 41.54	—	—	—	—	—	+39 11 11.8		Abthl. XIV.
317.	22 29 21.20	—	—	22 29 1.20	—	—	—		
	29 41.72	—	—	29 21.72	—	—	—		
318.	20 20 47.97	—	—	20 20 37.97	—	—	—		Fehler des Drucks.
320.	20 5 6.80	—	—	—	35	1561	+32 43 35.5		Bemerk. recht.
	6 35.54	—	—	—	71	1242	—		Abthl. XIV.
	21 6 52.80	—	3	21 6 33.80	—	—	—		
	16 50.27	—	—	15 50.27	—	—	—		
	17 1.91	—	—	16 1.91	—	—	—		
	18 11.43	—	—	17 11.43	—	—	—		
	18 33.26	—	—	17 33.26	—	—	—		
	19 11.20	—	—	18 11.20	—	—	—		
	19 13.26	—	—	18 13.26	—	—	—		
	19 30.10	—	—	18 30.10	—	—	—		
	19 56.06	—	—	18 56.06	—	—	—		73.
	20 54.70	—	—	19 54.70	—	—	—		
	20 58.29	—	—	19 58.29	—	—	—		
	21 17.80	—	—	20 17.80	—	—	—		
	21 43.28	—	—	20 43.28	—	—	—		
	21 51.78	—	—	20 51.78	—	—	—		
	22 36.46	—	—	21 36.46	—	—	—		
	23 11.03	—	—	22 11.03	—	—	—		
321.	22 45 6.00	—	2	22 45 21.98	—	—	—		
	56 53.38	—	—	56 43.38	—	—	—		Abthl. XIV.
	59 31.32	—	1	59 47.30	—	—	—		
	23 20 48.31	—	—	—	74	1492	+24 46 57.6		
	31 49.99	—	—	23 31 47.99	—	—	—		Bemerk. recht.
322.	19 31 53.90	—	4	19 32 13.90	—	—	—		74.
	45 3.42	—	—	45 13.42	—	—	—	=d. zweitfolgd.	Fehler des Drucks.
	46 4.48	—	—	46 4.48	—	—	—		Bemerk. verfällt.
	52 4.20	—	—	—	—	—	—	} Duplex	
	52 5.19	—	—	—	—	—	—		
	54 6.45	—	4	—	—	—	—		Fehler des Drucks.
	55 14.86	—	—	55 24.86	—	—	—		" " "
	59 27.43	—	—	20 0 17.43	—	—	—		" " "

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
322.	20 13 43.69	—	—	20 13 33.69	—	—	—		Fehler des Drucks.
	16 28.69	—	—	—	—	—	+43 3 29.9		Abthl. XIV.
	37 16.61	—	—	37 16.78	37	1239	+44 40 8.2		Bemerk. recht.
	46 24.47	—	—	46 27.47	—	—	—		Fehler des Drucks.
	52 21.35	—	—	—	55	1427	+43 45 3.9		
	21 6 18.90	—	—	21 6 28.90	—	—	—		75.
	20 0.72	—	—	20 0.87	69	1225	+43 4 12.9		
323.	21 3 44.83	—	—	21 3 44.71	27	1512	+22 53 27.1		
	48 18.83	—	—	48 48.83	—	—	—	+30″	Bemerk. recht.
324.	23 10 57.20	—	—	23 10 57.20	—	—	—		Bemerk. verfällt.
	20 53.50	—	—	20 43.50	—	—	—		
325.	22 36 36.51	—	—	22 35 36.51	—	—	—		
	55 15.61	—	—	—	54	1577	+24 14 49.3		Bemerk. verfällt.
	56 32.07	—	—	57 32.07	—	—	—		Fehler des Drucks.
	56 55.00	—	—	57 55.00	—	—	—		
	23 34 37.31	—	—	23 34 36.31	—	—	—		Bemerk. recht.
	0 28 19.17	—	—	0 28 29.17	—	—	—		Fehler des Drucks.
326.	21 4 46.96	—	—	21 4 47.12	52	1755	+28 9 52.0		
327.	22 3 28.52	—	—	22 3 28.52	—	—	—		Bemerk. verfällt.
328.	21 34 34.30	—	—	21 34 44.30	—	—	—		
	49 49.00	—	—	49 49.00	—	—	—		Bemerk. verfällt.
	22 7 20.26	—	—	22 7 20.27	73	1451	+40 50 43.7		Bemerk. recht.
	12 14.08	—	—	12 24.08	—	—	—		Abthl. XIV.
	12 58.30	—	—	13 8.30	—	—	—		
	22 48.40	—	—	22 58.40	—	—	—		Fehler des Drucks.
329.	22 32 0.00	—	—	—	63	1688	+27 19 20.9		
	43 14.40	—	—	22 43 14.40	—	—	—		Bemerk. verfällt.
	23 12 52.06	—	—	—	—	—	+28 44 4.3		Abthl. XIV.
	13 15.40	—	—	—	—	—	+27 45 32.1		
	15 15.08	—	—	—	—	—	+28 43 53.4		
330.	4 27 7.00	—	4	4 26 51.74	—	—	—		
	28 49.28	—	—	28 59.28	—	—	—		
	44 43.50	—	—	44 33.50	—	—	—		Fehler des Drucks.
	5 18 34.74	—	—	5 19 34.74	—	—	—		
332.	1 4 47.00	—	—	1 4 46.00	—	—	—		Bemerk. recht.
	44 55.30	—	—	43 55.30	—	—	—		76.
	47 41.70	—	—	47 40.70	—	—	—		Bemerk. recht.
	51 36.23	—	—	—	66	1690	+17 10 16.0		
	2 23 18.04	—	—	2 24 18.04	—	—	—		
333.	1 37 52.50	—	—	—	—	—	+27 3 27.8		Fehler des Drucks.
	2 18 29.84	—	—	—	—	—	+26 29 18.7		Fehler des Drucks.
	24 16.77	—	—	2 23 16.77	—	—	—		
334.	4 57 43.40	—	—	—	—	—	—	Saturnsmond	Bemerk. recht.
	58 5.72	—	—	—	—	—	—		Bemerk. verfällt.
	5 22 14.82	—	—	—	29	1706	+23 1 5.8		
	57 3.77	—	—	5 56 53.77	—	—	—		
	6 12 34.89	—	—	—	48	1636	+22 4 29.7		77.
	21 42.00	—	—	6 21 42.00	—	—	—		Bemerk. verfällt.
	22 10.23	—	—	22 10.23	—	—	—		
335.	5 55 9.30	—	—	5 56 9.30	—	—	—		
	55 55.04	—	—	56 55.04	—	—	—		
	55 54.60	—	—	56 54.60	—	—	—		Bemerk. recht.
336.	5 58 47.76	—	—	5 58 57.76	—	—	—		Fehler des Drucks.
337.	2 39 9.25	—	5	2 39 14.28	—	—	—		78.
	56 34.35	—	—	—	—	—	+16 48 41.2		Fehler des Drucks.
	3 14 3.13	—	—	—	—	—	+16 56 25.7		
338.	5 4 29.47	—	—	5 4 39.47	—	—	—		
	7 13.51	—	—	—	26	1431	—		Abthl. XIV.
	17 36.16	—	—	—	72	1673	+14 52 18.4		
	36 51.30	—	—	—	—	—	+16 31 1.7		Abthl. XIV.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
338.	6 1 16.50	—	—	—	63	1620	+15 19 36.5		
339.	7 15 50.29	—	3	7 16 6.40	—	—	—		
	27 22.32	—	—	—	—	—	+24 44 56.6		Fehler des Drucks.
	39 57.70	—	—	39 57.69	45	1664	+24 13 21.6		
	56 16.70	—	—	56 16.71	—	—	—		Abthl. XIV.
340.	4 3 58.93	—	—	4 3 48.93	—	—	—		
	21 5.92	—	—	11 5.92	—	—	+17 10 1.6		Fehler des Drucks.
	16 39.50	—	—	16 39.50	—	—	—	Duplex	Bemerk. verfällt.
	15 40.86	—	—	16 40.86	—	—	—		Fehler des Drucks.
	22 29.96	—	—	—	—	—	+18 58 58.6		
	38 9.15	—	—	—	—	—	—	Dupl. 12″	Abthl. XIV.
	38 9.30	—	—	—	—	—	—		
	53 49.50	—	—	53 39.50	—	—	—		
	58 44.51	—	—	—	—	—	+17 3 33.2		Abthl. XIV.
	5 5 8.40	—	—	—	—	—	+17 59 42.0		
	21 7.78	—	—	—	—	—	+18 7 0.4		Fehler des Drucks.
341.	7 42 14.65	—	—	7 42 24.65	—	—	—		
	47 38.56	—	4	47 54.58	—	—	—		
	8 8 33.43	—	—	—	26	1580	—		Abthl. XIV.
343.	4 34 10.20	—	—	4 35 10.20	—	—	—		
	36 34.49	—	—	36 34.49	—	—	—		Bemerk. verfällt.
	44 11.29	—	—	44 11.24	43	1506	+19 41 21.9		
344.	8 24 33.77	—	—	8 23 33.77	—	—	—		Minute fehlt im Orig.
	25 0.61	—	—	24 0.61	—	—	—		
345.	9 54 8.71	—	—	—	—	—	+22 59 53.6		Abthl. XIV.
	10 9 0.02	—	—	—	—	—	+22 55 2.7		
346.	5 40 7.08	—	—	—	—	—	+20 21 36.3		Fehler des Drucks.
	46 55.50	—	—	5 46 55.30	—	—	—		Abthl. XIV.
	47 46.50	—	—	—	—	—	+20 43 48.3		
	47 58.96	—	—	—	—	—	+20 39 34.9		Fehler des Drucks.
	58 44.30	—	—	—	60	1264	—		Fehler des Drucks.
	6 16 50.24	—	—	—	—	—	+20 54 —		
	21 12.03	—	—	6 21 12.02	46	1542	+19 50 32.4		
	50 50.95	—	—	50 15.95	—	—	—		Abthl. XIV.
347.	8 54 15.07	—	—	—	66	1694	—		
	55 32.61	—	—	8 55 22.61	—	—	—		Fehler des Drucks.
	9 32 54.20	—	—	9 32 54.20	—	—	—		Bemerk. verfällt.
	46 43.51	—	—	46 43.50	26	1567	+24 50 42.4		
348.	5 50 56.24	—	—	5 50 56.28	48	1352	+23 55 29.1		
	57 43.70	—	4	57 59.53	—	—	—		
	58 18.54	—	3	58 34.30	—	—	—		
	6 17 52.72	—	—	6 17 52.73	—	—	—		Abthl. XIV.
	33 1.53	—	—	35 1.53	—	—	—		Fehler des Drucks.
	37 15.22	—	—	—	—	—	+24 33 23.8		Abthl. XIV.
	38 3.50	—	—	39 3.50	—	—	—		
	38 28.40	—	—	39 28.40	—	—	—		
	39 13.73	—	—	40 13.73	—	—	—		
	51 13.27	—	—	—	—	—	+24 27 43.7		Fehler des Drucks.
349.	9 25 5.20	—	—	9 26 5.20	—	—	—		79.
350.	8 30 14.70	—	—	—	—	—	+29 28 6.6		Fehler des Drucks.
	41 17.70	—	—	8 45 17.70	—	—	—		
351.	7 34 4.86	—	—	7 33 54.86	—	—	—		Abthl. XIV.
	34 40.07	—	—	34 30.07	—	—	—		
	41 49.80	—	—	—	—	—	+28 21 45.1		Fehler des Drucks.
352.	7 38 24.36	—	—	7 38 24.37	—	—	—		Abthl. XIV.
	8 7 27.10	—	—	—	—	—	—		80.
	29 12.73	—	—	—	—	—	—	Derselbe	
	29 12.83	—	—	—	—	—	—		
353.	11 54 28.44	—	—	11 54 33.44	—	—	—		Abthl. XIV.
354.	8 48 59.13	—	3	8 49 16.20	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
354.	9 26 59.30	—	—	9 26 59.30	—	—	—		Bemerk. verfällt.
	37 8.03	—	—	37 38.03	—	—	—		Fehler des Drucks.
355.	9 31 59.77	—	—	9 30 59.77	—	—	—		81.
356.	10 35 4.86	—	—	10 35 3.86	—	—	—		Abthl. XIV.
	48 49.01	—	—	49 49.01	—	—	—		
	11 17 41.46	—	—	11 17 31.46	—	—	—		
	18 41.44	—	4	18 7.76	—	—	—		Bemerk. recht.
	23 40.64	—	—	25 40.64	—	—	—		82.
	38 6.23	—	—	37 56.23	—	—	—		
357.	10 34 27.46	—	—	10 34 27.46	—	—	—		Bemerk. verfällt.
	40 19.71	—	—	40 39.71	—	—	—		
	11 30 12.09	—	—	11 31 12.09	—	—	—		Fehler des Drucks.
	32 16.15	—	—	32 6.15	—	—	—		
	57 49.70	—	—	—	—	—	+34 24 48.4		Abthl. XIV.
358.	11 2 59.54	—	—	—	—	—	+36 46 34.1		Fehler des Drucks.
	36 14.03	—	—	—	—	—	+36 51 38.1		
359.	11 9 10.15	—	—	11 9 10.03	32	1425	+36 53 28.9		
	17 21.21	—	3	17 33.30	—	—	—		83.
	17 49.02	—	—	18 19.02	—	—	—		
	17 38.25	—	—	18 8.25	—	—	—		
	12 19 45.50	—	—	12 19 35.50	—	—	—		
	20 36.97	—	—	20 26.97	—	—	—		
	20 35.82	—	—	20 25.82	—	—	—		
	21 54.73	—	—	21 44.73	—	—	—		
	22 25.99	—	—	22 15.99	—	—	—		
	27 32.40	—	—	—	72	1507	+34 53 0.9		Bemerk. recht.
360.	12 19 14.40	—	—	12 19 40.40	—	—	—		Bemerk. verfällt.
	21 47.85	—	3	22 3.10	—	—	—		Abthl. XIV.
	13 12 0.29	—	—	13 12 10.29	—	—	—		
	12 34 33.49	—	—	13 34 33.49	—	—	—		Abthl. XIV.
									Fehler des Drucks.
361.	12 39 26.44	—	—	12 39 26.44	—	—	—		
	44 50.52	—	—	44 50.52	—	—	—		Bemerk. verfällt.
	13 21 12.43	—	—	13 22 12.43	—	—	—		
	24 1.50	—	—	—	71	1387	+16 56 41.9		Minute fehlt im Orig.
362.	11 56 58.62	—	—	11 56 48.62	—	—	—		
	12 21 11.75	—	—	12 24 11.75	—	—	—		Fehler des Drucks.
	36 4.70	—	—	35 54.70	—	—	—		
	54 49.80	—	—	54 59.80	—	—	—		
	13 2 35.30	—	—	13 2 25.30	—	—	—		
	19 57.46	—	—	—	—	—	+19 47 12.5		Fehler des Drucks.
	19 51.29	—	—	—	—	—	+20 42 2.4		Fehler des Drucks.
363.	12 17 10.43	—	—	12 18 10.43	—	—	—		Minute fehlt im Orig.
364.	13 54 27.68	—	—	—	—	—	+23 20 36.5		Fehler des Drucks.
	14 13 6.10	—	—	14 12 56.10	—	—	—		
365.	14 52 30.52	—	—	—	40	1338	+26 29 51.7		
	15 30 37.50	—	—	15 38 37.50	—	—	—		Fehler des Drucks.
	46 16.33	—	—	44 16.33	—	—	—		
	48 10.50	—	—	—	—	—	+24 52 3.7		Abthl. XIV.
	16 0 44.49	—	—	—	—	—	+25 24 14.3		Fehler des Drucks.
366.	15 2 6.65	—	—	15 2 6.65	—	—	—		Bemerk. verfällt.
367.	14 49 46.30	—	—	14 49 36.30	—	—	—		
	49 51.23	—	—	49 41.23	—	—	—		
	59 46.40	—	—	—	66	1357	+29 11 47.1		
	15 10 50.24	—	—	15 10 48.24	—	—	—		84.
	15 16.20	—	—	12 16.20	—	—	—		Fehler des Drucks.
	43 44.83	—	—	43 34.83	—	—	—		
	16 5 11.51	—	—	16 5 21.51	—	—	—		85.
	14 50.77	—	—	14 50.75	72	1527	+28 52 49.1		
	16 15.68	—	—	16 15.80	49	1533	+ 30 1 47.0		
	19 5.95	—	—	18 55.95	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
368.	15 31 21.59	—	—	—	55	1268	—		Abthl. XIV.
	43 17.49	—	—	15 42 47.49	—	—	—		
	43 29.75	—	—	42 59.75	—	—	—		86.
	43 36.40	—	—	44 36.40	—	—	—		
	44 26.42	—	—	45 26.42	45	1301	—		Schraube nach Abthl. XIV.
	45 28.80	—	—	46 28.80	—	—	—		
	16 22 0.05	—	—	16 23 0.05	—	—	—		
	22 10.60	—	—	23 10.60	—	—	—		
369.	15 35 53.60	—	—	15 35 43.60	—	—	—		
	16 26 24.00	—	—	16 26 22.00	—	—	—		Abthl. XIV. 87.
	35 56.28	—	—	—	—	—	—	Dupl. 2″	Abthl. XIV.
	17 9 40.30	—	—	17 10 10.30	—	—	—		
	16 48.50	—	—	17 48.50	—	—	—		
	17 7.00	—	—	18 7.00	—	—	—		
	17 9.66	—	—	18 9.66	—	—	—		
	17 13.40	—	—	18 13.40	—	—	—		88.
	28 55.90	—	4	29 11.63	—	—	—		
370.	15 42 47.38	—	—	15 42 47.33	64	1777	+32 45 44.8		89.
	53 24.35	—	—	—	53	1296	+32 10 0.4		
	16 9 8.73	—	—	—	—	—	+33 2 7.0		Fehler des Drucks.
	16 31.62	—	—	16 16 41.62	—	—	—		
	23 13.47	—	—	—	—	—	+31 19 43.8		Fehler des Drucks.
	31 19.31	—	—	—	—	—	—		90.
	42 57.50	—	—	42 47.50	—	—	—		Fehler des Drucks.
	55 58.40	—	—	—	—	—	+32 11 23.1		″ ″ ″
	56 51.73	—	—	56 41.73	—	—	—		″ ″ ″
	17 1 18.31	—	—	17 1 8.31	—	—	—		″ ″ ″
	9 13.79	—	—	—	—	—	—		
	9 13.12	—	—	—	—	—	—	} Derselbe	
371.	16 28 17.32	—	—	16 28 7.32	—	—	—		Abthl. XIV.
	32 44.79	—	5	32 27.18	—	—	—		91.
372.	15 48 41.60	—	—	15 48 21.60	—	—	—		
	48 55.57	—	—	48 35.57	—	—	—	—20″?	Bemerk. recht.
	56 57.62	—	—	55 57.62	—	—	—		Fehler des Drucks.
	16 18 8.70	—	—	16 17 58.70	—	—	—		
	23 42.74	—	—	—	—	—	+35 36 39.2		Fehler des Drucks.
	33 51.43	—	—	33 51.43	—	—	—		Bemerk. verfällt.
	50 4.90	—	—	49 56.90	—	—	—		92.
	17 3 8.50	—	—	17 2 58.50	—	—	—		
	26 10.55	—	—	25 20.55	—	—	—		
	31 19.30	—	—	—	—	—	+36 51 25.6		Fehler des Drucks.
373.	16 36 3.01	—	—	—	—	—	+29 4 55.8		″ ″ ″
	38 17.03	—	—	16 38 27.03	—	—	—		Bemerk. recht
	38 42.98	—	3	39 15.40	—	—	—		
	43 14.85	—	—	43 14.81	67	1274	+28 51 54.2		
	54 16.26	—	—	54 6.26	—	—	—		Fehler des Drucks.
	17 24 57.70	—	—	17 24 55.70	—	—	—		
	27 22.94	—	—	—	—	—	+27 15 26.3		″ ″ ″
	36 8.20	—	—	—	—	—	+27 48 21.5		″ ″ ″
	41 50.64	—	4	42 7.16	—	—	—		Abthl. XIV.
374.	22 8 22.40	—	—	22 8 22.56	34	1367	+29 12 16.5		
	59 31.00	—	—	—	—	—	+29 48 24.1		Fehler des Drucks.
	23 13 49.93	—	—	23 14 49.93	—	—	—		″ ″ ″
	29 10.82	—	—	29 11.82	—	—	—		Bemerk. recht.
375.	21 36 38.30	—	—	21 36 48.30	—	—	—		Fehler des Drucks.
376.	21 48 12.37	—	—	21 48 2.37	—	—	—		
	22 42 25.46	—	—	22 42 35.46	—	—	—		Bei d. folgd. Beob. erkannter Fehler.
	43 41.69	—	—	43 51.69	—	—	—		Bemerk. recht.
	23 5 58.89	—	—	—	—	—	+30 51 4.2		Fehler des Drucks.
	32 6.60	—	—	23 32 5.60	—	—	—		Bemerk. recht.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
376.	23 39 26.04	—	—	23 39 35.04	—	—	—		Bemerk. recht und Fehler des Drucks
	48 19.19	—	—	49 19.19	—	—	—		Fehler des Drucks.
377.	22 1 6.25	—	—	—	—	—	+33 40 30.7		" " "
	18 4.08	—	—	—	—	—	+34 30 43.2		" " "
	47 30.48	—	—	22 47 48.00	—	—	—		Orig. F. III. 47′ 48″.0 vgl. Note 5.
	49 10.00	—	—	49 0.00	—	—	—		
378.	23 28 34.20	—	—	23 28 24.20	—	—	—		
	58 24.30	—	4	58 9.20	—	—	—		
	0 52 56.52	—	—	0 52 57.52	—	—	—		Bemerk. recht.
379.	21 44 22.30	—	—	21 44 12.30	—	—	—		
	22 4 32.40	—	4	22 4 14.85	—	—	—		93.
	27 25.32	—	—	27 15.32	—	—	—		Bemerk. recht.
	23 29 53.23	—	—	23 29 53.23	—	—	—		Bemerk. verfällt.
380.	22 42 7.81	—	—	22 42 10.81	—	—	—		Bemerk. recht.
	47 9.76	—	3.4	—	—	—	—		Abthl. XIV.
	51 9.50	—	3	51 27.60	—	—	—		
	54 38.09	—	—	—	—	—	+38 58 36.2		Fehler des Drucks.
	23 31 10.18	—	—	23 32 10.18	—	—	—		
	31 33.33	—	—	32 33.33	—	—	—		
	32 44.08	—	—	33 44.08	—	—	—		
	33 20.30	—	—	34 20.30	—	—	—		
381.	21 47 48.26	—	—	—	—	—	+39 11 46.2		Fehler des Drucks.
	22 16 7.49	—	—	—	50	1221	—		Abthl. XIV.
	42 42.10	—	—	22 43 42.10	—	—	—		Minute fehlt im Orig.
	42 50.10	—	—	43 50.10	—	—	—		" " " "
	23 0 0.96	—	—	23 1 0.96	—	—	—		Fehler des Drucks.
	8 58.01	—	—	8 57.01	—	—	—		Bemerk. recht.
	19 58.52	—	—	—	—	—	+39 3 14.2		Fehler des Drucks.
	41 47.60	—	—	—	—	—	+40 46 49.0		Abthl. XIV.
382.	22 26 0.17	—	—	22 26 1.17	—	—	—		
	23 1 48.72	9	—	—	—	—	—		Fehler des Drucks.
	25 56.68	—	—	23 25 46.68	—	—	—		" " "
	45 59.75	—	—	46 9.75	—	—	—		
	46 4.97	—	—	46 14.97	—	—	—		
	47 29.70	—	—	47 39.70	—	—	—		
	47 50.10	—	—	48 0.10	—	—	—		
	48 2.14	—	—	48 12.14	—	—	—		
	48 38.20	—	3	48 48.20	—	—	—		Faden Fehler des Drucks.
383.	21 51 19.12	—	—	—	—	—	+43 20 7.4		Fehler des Drucks.
	56 55.75	—	—	21 57 55.75	—	—	—		
	58 1.00	—	—	59 1.00	—	—	—		
	58 7.78	—	5	58 47.86	—	—	—		94.
	22 21 37.15	—	—	22 21 27.15	—	—	—		Fehler des Drucks.
	23 15 6.25	—	—	—	—	—	—		95.
	15 45.69	—	—	23 15 55.69	—	—	—		Fehler des Drucks.
	21 43.72	—	—	—	—	—	+43 29 55.7		" " "
	24 3.50	—	—	23 33.50	—	—	—		96.
	57 46.89	—	—	—	—	—	+42 56 14.6		Fehler des Drucks.
384.	22 34 17.22	—	4	22 34 25.22	—	—	—		97.
	39 51.02	—	—	39 31.02	—	—	—		Abthl. XIV.
	0 3 59.01	—	—	—	57	1279	+34 23 43.2		
385.	23 48 20.50	—	—	23 48 19.50	—	—	—		Bemerk. recht.
	0 15 0.56	—	—	0 14 50.56	—	—	—		" "
	21 19.41	—	—	31 19.41	—	—	—		Fehler des Drucks.
386.	23 17 44.65	—	—	23 17 45.65	—	—	—		Bemerk. recht.
	23 45.86	—	—	—	—	—	—		98.
	0 7 34.78	—	—	—	—	—	+35 10 51.1		Abthl. XIV.
	20 35.30	—	—	0 20 25.30	—	—	—		Fehler des Drucks.
387.	23 38 52.04	—	—	—	65	1014	—		Abthl. XIV.
	51 13.07	—	—	23 51 13.07	—	—	—		Bemerk. verfällt, fehlt auch im Orig.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
387.	23 51 46.75	—	—	23 51 46.75	—	—	—		Bemerk. verfällt.
	55 15.36	—	—	52 15.36	—	—	—		Bem. verfällt, Zeitminute Druckfehler.
	52 30.66	—	—	52 30.66	—	—	—		Bemerk. verfällt.
	53 42.43	—	—	53 42.43	—	—	—		
	54 13.12	—	—	54 13.12	—	—	—		" "
	54 17.90	—	—	54 17.90	—	—	—		" "
	55 43.54	—	—	55 43.54	—	—	—		" "
	0 23 36.97	—	5	0 23 18.81	—	—	—		" "
	24 40.33	—	3	24 22.20	—	—	—		
	25 35.20	—	4	25 16.72	—	—	—		
	54 34.35	—	3	54 16.20	—	—	—		
	1 0 29.33	—	—	1 0 29.59	59	1358	+37 31 44.5		
	4 42.50	—	—	4 24.50	—	—	—		Fehler des Drucks.
	10 17.70	—	—	10 7.70	—	—	—		
388.	23 54 55.49	—	4	23 55 11.54	—	—	—		
	0 22 10.99	—	—	0 21 10.99	—	—	—		
	22 32.68	—	—	21 32.68	—	—	—		
	24 17.20	—	—	23 17.20	—	—	—		
	35 13.55	—	3	34 57.60	—	—	—		
	37 33.77	—	—	37 37.26	—	—	—		Abthl. XIV. 99.
	1 16 55.70	—	—	—	37	989	—		Fehler des Drucks.
390.	0 33 42.27	—	—	0 33 52.27	—	—	—		
	34 49.65	—	—	—	41	975	—		" " "
	36 10.62	—	—	—	—	—	+29 24 12.3		" " "
	41 10.14	—	—	41 20.14	—	—	—		" " "
	1 4 38.29	—	—	—	—	—	+29 38 16.2		" " "
	28 59.51	—	—	1 29 59.51	57	1016	+29 39 40.7		" " "
	42 14.27	—	1	42 31.02	—	—	—		100.
391.	3 2 32.70	—	—	3 2 22.70	—	—	—		
	3 46.38	—	5	3 31.14	—	—	—		
	57 8.70	—	3	56 53.50	—	—	+19 25 —		101.
392.	0 0 0.63	—	—	0 0 9.63	—	—	—		Abthl. XIV.
	40 51.30	—	—	40 51.30	—	—	—		In Abthl. XIV. fälschlich corrigirt.
	1 44 38.34	—	—	1 43 38.34	—	—	—		
	45 19.30	—	—	44 19.30	—	—	—		
	45 38.58	—	—	44 38.58	—	—	—		
	46 30.40	—	—	45 30.40	—	—	—		
393.	3 24 36.50	—	3	3 24 52.40	—	—	—		
	40 11.15	—	—	40 13.15	—	—	—		Bemerk. recht. 102.
	45 15.48	—	—	—	—	—	+22 41 44.2		Fehler des Drucks.
	4 7 3.71	—	—	—	—	—	+21 28 53.6		Fehler des Drucks.
	8 54.60	—	—	4 8 54.60	—	—	—		Bemerk. verfällt.
	12 56.52	—	—	12 46.52	—	—	—		103.
394.	0 3 30.40	—	—	—	—	—	+15 30 46.1		
	4 53.02	—	—	0 4 52.98	—	—	+15 2 19.8		Fehler des Drucks. 104.
	5 39.18	—	—	5 39.10	—	—	+15 38 23.3		" " " 104.
	6 16.54	—	—	6 16.38	—	—	+15 41 56.1		" " " 104.
	1 31 7.25	—	—	—	—	—	+15 32 40.0		" " "
	39 45.34	—	—	—	—	—	+16 10 22.7		" " "
	2 8 12.88	—	—	—	—	—	+16 6 24.5		" " "
	33 31.25	—	—	—	—	—	+16 13 57.6		Fehler des Drucks.
395.	3 42 20.60	—	—	—	37	1029	+24 39 15.6		
	4 21 16.43	9	—	—	—	—	—		Abthl. XIV.
	22 20.52	8	—	—	—	—	—		" "
	5 2 37.70	—	—	5 1 37.70	—	—	—		
	9 22.60	—	—	—	—	—	+24 28 4.5		
	15 44.60	—	—	14 44.60	—	—	—		Fehler des Drucks.
396.	3 58 50.60	—	—	3 58 40.60	—	—	—		
	4 52 32.20	—	—	4 52 42.20	—	—	—		
397.	3 30 49.48	—	—	3 30 39.48	—	—	—		Fehler des Drucks.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
397.	3 30 49.30	—	—	3 30 39.30	—	—	—		105.
	4 21 56.70	—	—	4 21 56.70	—	—	—		Bemerk. verfällt.
	27 8.92	—	—	28 8.92	—	—	—		
	27 15.40	—	—	28 15.40	—	—	—		
	27 46.28	—	—	28 46.28	—	—	—		
	28 23.89	—	—	29 23.89	—	—	—		
	30 4.96	—	—	31 4.96	—	—	—		
	30 32.70	—	—	31 32.70	—	—	—		
	36 21.77	—	—	—	38	1047	—		Fehler des Drucks.
398.	4 30 42.83	—	—	4 30 43.83	—	—	—		Abthl. XIV.
	53 47.60	—	—	53 47.60	—	—	—		Bemerk. verfällt.
	54 6.51	—	—	54 6.51	—	—	+30 9 36.7		Bemerk. verfällt, Fehler des Drucks.
	54 8.04	—	—	54 8.04	—	—	—		Bemerk. verfällt.
	55 14.16	—	—	55 14.16	—	—	—		„ „
399.	7 35 34.24	—	—	7 35 34.27	67	943	+29 9 42.1		
400.	4 20 59.79	—	—	4 20 59.97	72	1016	+30 54 18.1		
401.	7 3 31.18	—	—	7 1 31.18	—	—	—		Fehler des Drucks.
	8 45.83	—	—	9 45.83	—	—	—		
	9 15.50	—	—	10 15.50	—	—	—		
	9 24.97	—	—	10 24.97	—	—	—		
	9 44.38	—	—	10 44.38	—	—	—		
	10 54.60	—	—	11 54.60	—	—	—		
	52 25.47	—	—	53 25.47	—	—	—		
	53 54.60	—	—	54 54.60	—	—	—		
	54 6.21	—	—	55 6.21	—	—	—		
	54 11.69	—	—	55 11.69	—	—	—		106.
	59 5.90	—	—	59 8.90	—	—	—		107.
	8 8 33.92	—	—	8 8 23.92	—	—	—		Fehler des Drucks.
402.	3 29 47.96	—	—	—	—	—	—	Dupl. 3″	Abthl. XIV.
	29 48.25	—	—	—	—	—	—		
	4 14 18.53	—	—	4 14 18.84	66	1239	+33 11 0.8		
	14 37.28	—	4	14 54.57	—	—	—		
	33 53.00	—	—	—	—	—	—	Derselbe	108.
	33 53.70	—	—	—	—	—	—		
	5 5 4.47	—	—	5 5 4.40	—	—	—		Abthl. XIV.
403.	6 57 50.54	—	3	6 58 8.30	—	—	—		109.
	7 31 50.60	—	—	7 30 50.60	—	—	—		Fehler des Drucks.
	38 54.20	—	—	38 58.20	—	—	—		Abthl. XIV.
	8 11 52.81	—	—	8 12 43.81	—	—	—		110.
	12 36.94	—	—	13 36.94	—	—	—		111.
	24 34.10	—	—	24 43.10	—	—	—		Fehler des Drucks.
	35 19.04	—	—	—	53	971	—		Abthl. XIV.
404.	4 34 32.00	—	—	—	—	—	+34 50 13.9		Fehler des Drucks.
	5 13 49.83	—	—	—	—	—	+36 2 6.4		„ „ „
405.	5 10 6.40	—	4	5 9 50.42	—	—	—		112.
	24 56.40	—	—	—	—	—	+26 51 31.7		Fehler des Drucks.
	6 7 2.00	—	—	6 7 0.00	—	—	—		113.
	55 59.91	—	—	55 49.91	—	—	—		
406.	9 19 49.71	—	—	9 20 49.71	—	—	—		Gleicher Fehler wie beim folgenden.
	20 53.32	—	—	21 53.32	—	—	—		Bemerk. recht.
	24 27.30	—	—	24 7.30	—	—	—		
	30 55.18	—	—	—	—	—	+29 26 51.8		Fehler des Drucks.
	45 34.94	8	—	—	—	—	—		Bemerk. verfällt.
407.	9 8 35.45	—	—	9 8 17.45	—	—	—		Fehler des Drucks; vergl. Note 5.
	49 46.51	—	—	—	—	—	+37 55 49.4		Abthl. XIV.
408.	12 16 27.18	—	—	—	—	—	+32 47 1.3		Fehler des Drucks.
	52 3.09	—	—	12 52 13.09	—	—	—		„ „ „
	13 5 34.97	—	—	—	—	—	+32 35 23.0		„ „ „
	22 11.35	—	—	13 23 11.35	—	—	—		Minute fehlt im Orig.
409.	12 29 32.62	—	—	12 29 32.52	39	1386	+33 29 6.9		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
409.	12 38 58.52	—	—	—	—	—	+33 30 50.6		Fehler des Drucks.
	13 25 35.30	—	—	13 25 45.30	—	—	—		
410.	10 8 10.10	—	—	10 9 10.10	—	—	—		
	8 13.89	—	—	9 13.89	—	—	—		
411.	11 2 15.11	—	—	—	—	—	+38 38 3.0		Fehler des Drucks.
	8 56.04	—	—	11 8 55.91	46	1378	+37 50 3.6		
412.	12 10 19.80	—	—	—	—	—	+24 5 5.1		Fehler des Drucks.
	16 4.40	—	—	—	—	—	+24 29 4.7		„ „ „
	57 53.08	—	—	—	—	—	+24 46 38.4		„ „ „
	13 10 24.30	—	—	13 10 34.30	—	—	—		Bemerk. recht.
	22 54.14	—	—	22 44.14	—	—	—		Fehler des Drucks.
	36 37.31	—	—	36 27.31	—	—	—		„ „ „
	43 22.11	—	—	—	—	—	+24 30 21.4		„ „ „
413.	13 49 41.45	—	—	13 49 31.45	—	—	—		
	15 16 33.63	—	2	15 16 16.87	—	—	—		
	16 46.56	—	3	16 29.20	—	—	—		114.
	17 16.01	—	3	16 58.60	—	—	—		
	31 15.34	—	—	31 5.34	—	—	—		
414.	14 2 2.54	—	—	14 1 52.54	—	—	—		Fehler des Drucks.
	10 50.18	—	—	10 59.18	—	—	—		Abthl. XIV.
	22 23.49	—	—	—	62	1243	—		Abthl. XIV.
	34 15.94	—	—	34 25.94	—	—	—		
	57 4.14	—	—	57 1.14	—	—	—		Fehler des Drucks.
	15 2 17.70	—	2	15 2 35.41	—	—	—		
	19 48.11	—	—	10 48.11	—	—	—		Fehler des Drucks.
	16 20.63	—	—	16 20.63	—	—	—		Bemerk. verfällt.
415.	14 26 54.25	—	—	14 26 56.25	—	—	—		Abthl. XIV.
	41 52.49	—	—	—	—	—	+38 23 46.7		Fehler des Drucks.
416.	13 53 20.17	—	—	13 53 20.17	—	—	—		Bemerk. verfällt.
	14 38 45.00	—	—	—	31	1675	+35 6 41.4		
	49 46.30	—	—	14 49 16.30	—	—	—		Fehler des Drucks.
	58 21.40	—	2	58 39.37	—	—	—		
	15 7 24.64	—	—	15 7 24.86	—	—	+35 32 2.1		Fehler des Drucks.
	8 8.30	—	—	—	—	—	+35 33 36.9		„ „ „
	13 50.51	—	—	14 40.51	—	—	—		
	13 32.40	—	—	14 22.40	—	—	—		
	15 34.60	—	—	15 24.60	—	—	—		
	26 58.66	—	—	—	—	—	+35 58 59.7		Fehler des Drucks.
	31 49.30	—	—	—	—	—	+36 52 1.5		„ „ „
417.	14 31 48.57	—	—	14 34 48.57	—	—	—		Abthl. XIV.
	43 35.07	—	—	—	—	—	+40 11 9.3		Fehler des Drucks.
	50 19.38	—	—	—	—	—	+39 23 50.2		„ „ „
	15 1 23.50	—	—	—	—	—	+40 46 23.2		„ „ „
	8 41.00	—	4	15 8 21.92	—	—	—		Im Original Bemerk. „Fad. ?“
	20 7.83	—	—	19 57.83	—	—	—		
	22 25.23	—	—	22 35.23	—	—	—		
	39 49.50	—	—	39 39.50	—	—	—		
	58 45.20	—	1	59 4.28	—	—	—		
	16 5 4.93	—	—	—	29	1534	—		Abthl. XIV.
418.	15 1 30.30	—	—	15 1 30.39	—	—	—		„ „
	16 49.82	—	—	17 49.82	—	—	—		
	37 22.80	—	—	37 22.75	—	—	+41 47 41.2		Fehler des Drucks.
	37 55.40	—	—	37 55.45	—	—	+41 15 54.9		„ „ „
	39 10.41	—	—	39 10.36	—	—	+41 29 25.9		„ „ „
	39 17.55	—	—	39 17.60	—	—	+41 26 53.5		„ „ „
	41 53.43	—	—	41 53.35	—	—	+42 15 —		
	16 12 32.30	—	—	—	—	—	+41 45 41.6		Fehler des Drucks.
	13 53.22	—	—	16 13 53.24	—	—	+42 28 9.2		„ „ „
	15 6.60	—	—	—	—	—	+42 32 16.7		„ „ „
	15 37.78	—	—	—	—	—	+41 28 3.7		„ „ „

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u , ″			u , ″			° , ″		
418.	16 15 53.81	—	—	—	—	—	+41 22 25.9		
	16 4.60	—	—	—	—	—	+41 24 32.0		
	17 6.38	—	—	—	—	—	+42 29 1.4		
	19 3.60	—	—	16 19 3.58	—	—	+42 16 46.0		
	18 57.40	—	—	—	—	—	+42 30 56.9		
	19 11.48	—	—	—	—	—	+42 46 17.4		
	29 37.95	—	—	29 27.95	—	—	—		
419.	15 19 35.90	—	—	15 19 25.90	—	—	—		
	27 38.70	—	—	—	—	—	+45 52 36.0		
	56 44.74	—	—	56 34.74	—	—	—		Fehler des Drucks.
	16 2 37.40	—	—	—	—	—	+45 24 47.5		
	6 41.79	—	—	—	—	—	+44 33 25.4		
	8 9.30	—	—	16 9 9.30	—	—	—		
	18 58.80	—	—	—	—	—	+44 46 58.1		
	37 41.02	—	—	—	—	—	+45 31 21.6		
	17 1 50.47	—	—	—	—	—	+45 14 35.3		
420.	16 24 28.93	—	—	16 24 38.93	—	—	—		
	17 11 53.38	—	—	—	—	—	+43 58 34.3		
	28 8.59	—	—	17 28 2.59	—	—	—		Abthl. XIV.
421.	16 0 26.09	—	—	—	—	—	+37 4 30.1		" "
	34 59.20	—	—	16 35 9.20	—	—	—		
	44 7.80	—	—	43 57.80	—	—	—		
	57 52.40	—	—	58 10.62	—	—	—		Fehler des Drucks, vergl. Note 11.
	17 0 44.87	—	—	17 0 41.87	—	—	—		Fehler des Drucks.
	28 6.49	—	—	—	—	—	+38 39 5.5		
	29 11.80	—	—	—	—	—	+39 4 32.1		
	29 11.45	—	—	—	—	—	+39 9 33.5		
	30 39.27	—	—	—	—	—	+37 25 19.9		Abthl. XIV.
422.	16 7 39.50	—	—	—	—	—	+40 47 49.0		
	8 0.30	—	—	—	—	—	+41 10 42.9		
	8 41.51	—	—	16 8 41.65	—	—	+40 1 32.3		
	9 0.74	—	—	10 0.46	—	—	+40 47 32.3	Min. +1'?	Abthl. XIV. Bemerk. recht.
	10 34.16	—	—	10 33.87	—	—	+40 28 14.2		
	11 54.04	—	—	11 53.76	—	—	+39 22 8.7		
	12 53.80	—	—	12 53.52	—	—	+39 13 5.0		
	13 43.45	—	—	13 43.17	—	—	+40 7 49.0		Abthl. XIV.
	14 7.20	—	—	—	—	—	+40 40 48.0		
	38 0.64	—	2	—	—	—	—		
	40 38.23	—	—	40 39.23	—	—	—		
	17 6 15.60	—	—	17 5 15.60	—	—	—		
	6 56.80	—	—	5 56.80	—	—	—		
	6 32.90	—	—	5 32.90	—	—	—		
423.	16 29 32.42	—	—	16 20 32.42	—	—	—		Fehler des Drucks.
	20 55.01	—	—	20 55.02	51	1478	+25 54 44.4		Scalenth. im Orig. undeutlich 50 od. 51.
	36 33.17	—	3.4	—	—	—	—		Abthl. XIV.
	37 53.12	—	—	—	—	—	+24 54 54.7		Fehler des Drucks.
	46 45.20	—	—	46 35.20	—	—	—		
	50 51.13	—	—	50 51.20	57	1416	+25 37 5.6		" " "
	17 29 21.60	—	—	—	—	—	+27 9 0.1		Abthl. XIV.
	25 26.80	—	—	17 35 26.80	—	—	—		Fehler des Drucks.
	39 54.31	—	—	—	—	—	+25 35 27.8		Abthl. XIV.
	40 57.70	—	—	—	—	—	+25 28 42.2		Fehler des Drucks.
	43 43.00	—	—	42 43.00	—	—	—		
	46 20.13	—	—	—	—	—	+26 6 40.8		" " " Abthl. XIV.
	18 2 57.54	—	—	—	—	—	+25 5 53.3		" "
424.	16 51 52.26	—	—	—	42	1148	—		" "
	53 2.34	—	—	—	—	—	+31 7 42.9		Fehler des Drucks.
	17 38 12.20	—	—	17 38 22.20	—	—	—		
	38 22.40	—	—	38 32.40	—	—	—		} 115.
	18 10 31.94	—	—	18 10 31.94	—	—	—		Bemerk. verfällt.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u , "			u , "			° , "		
424.	18 11 2.62	—	—	18 11 2.62	—	—	—		Bemerk. verfällt.
	16 36.74	—	—	16 16.74	—	—	—		Fehler des Drucks.
	19 0.58	—	—	19 0.88	—	—	—		Abthl. XIV.
	20 19.70	—	—	—	—	—	+28 50 21.8		Fehler des Drucks.
425.	16 32 34.77	—	—	—	54	1166	—		Abthl. XIV.
	49 37.53	—	—	16 49 47.53	—	—	—		
	17 5 57.69	—	—	17 5 57.67	—	—	—		Abthl. XIV.
	8 53.18	—	—	—	—	—	+33 26 40.3		Fehler des Drucks.
	45 43.29	8	—	—	—	—	—		Abthl. XIV.
	47 22.72	—	—	47 42.72	—	—	—		Fehler des Drucks.
426.	16 50 5.50	—	4	16 49 45.67	—	—	—		116.
	17 19 34.10	—	—	—	24	1366	+43 16 19.7		
	46 57.24	—	—	17 46 47.24	—	—	—		
427.	17 8 5.31	—	—	17 9 5.31	—	—	—		Bemerk. recht.
	16 20.68	—	—	16 50.68	—	—	—		
	17 13.20	—	—	17 43.20	—	—	—		
	17 21.54	—	—	17 51.54	—	—	—		
	17 33.30	—	—	18 3.30	—	—	—		
	26 48.71	—	—	—	62	1318	+19 22 36.8		
	52 4.01	—	—	51 48.62	—	—	—		Fehler des Drucks. vergl. Note 5.
	55 58.38	—	—	55 48.38	—	—	—		
	18 46 41.37	—	4	18 46 56.65	—	—	—		
	55 17.72	7	—	—	—	—	—		Abthl. XIV.
428.	17 32 39.78	—	—	—	—	—	+25 6 7.0		Fehler des Drucks.
	38 23.09	—	—	—	—	—	+24 48 26.5		" " "
	40 47.40	—	—	17 40 47.40	—	—	—		Bemerk. verfällt.
	50 12.31	—	—	50 12.21	—	—	—		Abthl. XIV.
	50 22.20	—	—	—	—	—	+24 9 7.0		Fehler des Drucks.
	53 55.30	9	—	—	—	—	—		Abthl. XIV.
	18 2 55.10	—	—	18 2 54.10	—	—	—		" "
	5 54.17	—	—	5 44.17	—	—	—		Fehler des Drucks.
	11 33.98	—	—	—	59	1394	—		Abthl. XIV.
	19 31 54.74	—	—	19 31 54.92	32	1203	+24 53 14.2		
429.	17 38 34.99	—	1	17 38 53.96	—	—	—		Abthl. XIV.
	18 25 26.28	—	3	18 25 7.30	—	—	—		
	55 26.91	—	—	55 16.91	—	—	—		Abthl. XIV.
430.	18 2 4.34	—	—	—	—	—	+42 55 1.9		" "
	11 28.96	—	—	18 12 28.96	—	—	—		" "
431.	18 2 43.40	—	2	18 2 58.42	—	—	—		
	5 23.07	—	—	5 24.07	—	—	—		Bemerk. recht.
	11 39.94	—	—	11 59.94	—	—	—		
	12 3.04	—	—	12 23.04	—	—	—		
	14 35.50	—	2	14 50.59	—	—	—		
	16 32.87	—	—	16 22.87	—	—	—		
	59 33.16	—	—	59 33.16	—	—	—		Bemerk. verfällt.
	19 12 37.30	—	—	—	—	—	—		117.
	38 42.80	—	—	—	—	—	+16 53 54.7		Fehler des Drucks.
	43 14.53	—	—	19 43 9.53	—	—	—		
432.	18 1 16.01	—	—	18 1 16.01	—	—	—		Bemerk. verfällt.
	1 26.42	—	—	2 26.42	—	—	—		Bemerk. recht.
	5 11.16	—	—	5 9.42	—	—	—		Fehler des Drucks. 118.
	23 32.48	—	—	23 22.48	—	—	—		Fehler des Drucks.
	26 28.15	—	5	26 12.21	—	—	—		
	52 14.25	—	—	52 34.25	—	—	—		Fehler des Drucks.
	56 2.32	—	—	56 2.32	—	—	—		
	56 57.48	—	—	56 57.48	—	—	—		
	57 9.60	—	—	57 9.60	—	—	—		Bemerk. verfällt.
	57 24.98	—	—	57 24.98	—	—	—		
	58 14.30	—	—	58 14.30	—	—	—		
	58 47.05	—	—	58 47.05	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
432.	18 59 35.20	—	—	18 59 35.20	—	—	—		Bemerk. verfällt.
	19 5 44.20	—	—	19 5 34.20	—	—	—		Bemerk. recht.
	5 52.86	—	—	—	51	1160	—		Abthl. XIV.
	12 14.72	—	—	—	36	598	—		
	13 48.20	—	—	13 58.20	—	—	—		Fehler des Drucks.
	17 49.51	—	—	17 39.51	—	—	—		
433.	18 41 49.86	—	—	18 41 49.86	—	—	—		Bemerk. verfällt.
	46 47.59	—	—	46 37.59	—	—	—		
	46 52.24	—	—	46 42.24	—	—	—		
	48 9.20	—	—	47 59.20	—	—	—		
	57 29.63	—	—	57 29.63	—	—	—		Bemerk. verfällt.
	19 9 41.73	—	—	—	—	—	+28 29 49.1		Fehler des Drucks.
	25 8.40	—	—	—	—	—	—		119.
435.	18 43 42.20	—	—	—	—	—	—		120.
	43 54.03	—	—	18 43 55.03	—	—	—		Bemerk. recht.
	51 49.30	—	—	51 39.30	—	—	—		
	19 26 42.30	—	—	19 26 32.30	—	—	—		
	36 59.50	—	—	36 49.50	—	—	—		
	44 48.40	—	—	—	—	—	+30 29 18.8		Fehler des Drucks.
436.	18 29 13.20	—	—	18 29 23.20	—	—	—		121.
	19 15 35.88	—	—	19 15 35.88	—	—	—		Bemerk. verfällt.
	15 51.20	—	—	15 51.20	—	—	—		
	23 6.22	—	—	23 16.22	—	—	—		Fehler des Drucks.
	20 0 38.30	—	4	20 0 20.52	—	—	—		
437.	18 58 19.03	—	—	—	—	—	—		122.
	19 23 32.84	—	—	—	—	—	+20 51 25.9		
	20 2 16.90	—	—	20 3 16.90	—	—	—		
438.	0 22 41.35	—	—	0 22 31.35	—	—	—		Fehler des Drucks.
	33 15.70	—	—	—	—	—	+32 26 6.4		
	36 32.10	—	—	36 22.10	—	—	—		
	49 23.05	—	—	49 33.05	—	—	—		Fehler des Drucks.
	59 10.54	—	—	59 0.54	—	—	—		
	1 4 11.68	—	—	1 4 11.67	61	1443	+32 35 20.4		Bemerk. recht. 123.
	19 12.25	—	—	—	—	—	+31 34 37.0		Fehler des Drucks.
439.	23 52 28.20	—	—	23 52 18.20	—	—	—		
	0 22 14.43	—	—	0 23 14.43	—	—	—		Fehler des Drucks.
	25 56.30	—	—	—	31	1226	+33 4 7.0		Bemerk. verfällt.
	46 23.96	—	—	46 24.06	43	857	+33 38 1.1		
	56 32.65	—	—	—	—	—	+34 12 26.1		Abthl. XIV.
	1 0 52.56	—	—	1 0 32.56	—	—	—		Fehler des Drucks.
	21 6.50	—	—	21 16.50	—	—	—		Fehler des Drucks.
	47 57.44	—	—	47 47.44	—	—	—		
440.	23 53 53.00	—	—	23 53 53.00	—	—	—		Bemerk. verfällt.
	0 38 35.69	—	—	0 38 25.69	—	—	—		Fehler des Drucks.
441.	0 55 48.51	—	5	0 55 29.82	—	—	—		〃 〃 〃
	1 37 41.01	—	—	1 37 51.01	—	—	—		〃 〃 〃
	32 7.22	—	—	43 7.22	—	—	—		〃 〃 〃
442.	23 59 0.27	—	—	23 58 50.27	—	—	—		
	0 1 23.21	—	—	0 1 13.21	—	—	—		
	4 46.37	—	—	—	50	1108	—		Abthl. XIV.
443.	0 40 9.54	—	—	0 40 19.54	—	—	—		Fehler des Drucks.
	48 48.61	—	—	—	—	—	+41 54 46.2		〃 〃 〃
444.	0 5 54.71	—	—	0 6 14.79	—	—	—		Fehler des Drucks. vergl. Note 5.
	6 22.46	—	—	6 42.87	—	—	—		〃 〃 〃 〃 〃 〃
	12 44.27	—	—	12 34.27	—	—	—		Fehler des Drucks.
	13 23.30	—	—	13 24.30	—	—	—		Abthl. XIV.
	26 56.60	—	—	26 58.60	—	—	—		
	47 19.53	—	—	—	—	—	+44 41 22.9		〃 〃 Fehler des Drucks.
	1 56 24.34	—	—	—	—	—	—		124.
445.	0 55 36.42	—	—	—	—	—	+24 2 56.8		Fehler des Drucks.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
445.	1 7 31.30	—	—	1 7 31.30	—	—	—		Bemerk. verfällt.
	7 58.79	—	—	7 58.79	—	—	—		
	11 0.35	—	—	10 0.35	—	—	—		125.
446.	0 44 41.07	—	—	0 44 31.07	—	—	—		
	2 25 2.89	—	—	2 25 2.87	—	—	—		Abthl. XIV.
	26 5.20	—	—	26 1.20	—	—	—		Bemerk. recht.
447.	1 2 58.33	—	—	1 3 8.33	—	—	—		
	4 16.76	—	—	4 26.76	—	—	—		
	4 28.70	—	—	4 38.70	—	—	—		
	4 56.98	—	—	5 6.98	—	—	—		
	36 40.87	—	—	—	—	—	+28 44 40.3		Fehler des Drucks.
	57 43.50	—	—	—	33	1280	+28 49 20.5		
448.	3 29 9.49	—	—	3 28 59.49	—	—	—		Bemerk. verfällt.
	32 39.19	—	—	—	—	—	—		
	32 41.43	—	—	—	—	—	—	Duplex	Abthl. XIV.
	54 45.94	—	2	—	—	—	—		
	56 44.80	—	2	—	—	—	—		
	56 55.70	—	—	57 5.70	—	—	—		
	4 0 42.67	—	1	4 1 1.23	—	—	—		
	17 26.76	—	—	—	31	892	—		Abthl. XIV.
449.	6 9 54.80	—	—	—	—	—	+35 17 56.2		Fehler des Drucks.
	17 31.71	—	—	6 17 21.71	—	—	—		
	7 34 3.78	—	—	—	—	—	—		
	34 3.66	—	—	—	—	—	—	Derselbe	
450.	8 34 30.40	—	—	8 34 31.40	—	—	—		Bemerk. recht.
	51 1.30	—	—	—	—	—	+39 31 45.0		Fehler des Drucks.
	55 11.94	—	—	55 1.94	—	—	—		
	9 42 22.42	—	—	9 42 2.42	—	—	—		
451.	8 3 4.47	—	—	8 4 4.47	—	—	—		Fehler des Drucks.
	40 44.03	—	—	—	—	—	+35 51 52.4		
452.	7 17 25.49	—	—	7 17 45.49	—	—	—		126.
453.	9 46 57.04	—	—	—	—	—	+21 25 41.2		Fehler des Drucks.
	54 23.98	—	—	—	—	—	+22 21 51.1		
	55 49.69	—	—	9 55 59.69	—	—	—		
454.	9 33 2.21	—	—	—	—	—	+41 33 48.6		Fehler des Drucks.
	53 24.07	—	—	9 53 25.07	—	—	—		Bemerk. recht.
	55 49.73	—	—	55 39.73	—	—	—		
	10 9 17.39	—	—	10 9 27.39	—	—	—		Fehler des Drucks.
	19 27.19	—	—	19 37.19	—	—	—		
	30 4.10	—	—	—	—	—	+42 25 0.9		
	50 45.92	—	—	50 55.92	—	—	—		
455.	9 9 50.98	—	—	9 9 40.98	—	—	—		Fehler des Drucks.
	32 12.49	—	—	32 2.49	—	—	—		
456.	10 17 49.30	—	—	10 17 39.30	—	—	—		
	41 4.62	—	—	—	—	—	—		127.
	52 14.50	—	—	—	—	—	+18 33 29.6		Fehler des Drucks.
	11 29 10.45	—	—	—	—	—	+18 3 34.3		
	34 7.97	—	—	—	35	1401	—		Abthl. XV.
457.	10 4 8.49	—	—	—	—	—	+16 59 36.5		
	48 25.50	—	—	—	37	864	—		Fehler des Drucks.
	50 26.62	—	—	10 50 36.62	—	—	—		Fehler des Drucks.
	11 2 42.30	—	—	—	44	871	+15 40 42.6		Bemerk. verfällt.
	7 3.57	—	—	—	—	—	+15 57 46.0		Abthl. XV.
	19 6.72	—	—	—	53	959	—		
	31 5.90	—	—	11 31 15.90	—	—	—		Fehler des Drucks.
458.	12 27 57.00	—	—	—	32	1795	+35 9 59.0		Bemerk. recht.
	30 9.40	—	—	12 30 19.40	—	—	—		
	44 0.30	—	—	44 10.30	—	—	—		
	55 32.30	—	—	—	—	—	+35 57 2.0		Fehler des Drucks.
	57 29.90	—	—	58 29.90	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u , ″			u , ″			° , ″		
459.	11 9 9.25	—	1	11 9 28.62	—	—	—		
	55 25.40	—	—	55 52.40	—	—	—		Fehler des Drucks.
	12 13 29.20	—	—	12 12 29.20	—	—	—		128.
460.	13 14 4.00	—	—	13 13 4.00	—	—	—		Abthl. XV.
	14 7 50.54	—	3	14 8 6.00	—	—	—		129.
	15 7.28	—	—	15 7.28	—	—	—		Bemerk. verfällt.
461.	11 4 56.20	—	—	11 3 56.20	—	—	—		Abthl. XV.
	20 42.47	—	—	20 32.47	—	—	—	Zeit —10″?	Bemerk. recht.
	12 24 27.74	—	—	12 24 37.74	—	—	—		
	35 42.94	—	—	35 42.25	72	1058	+45 5 47.9		
462.	13 48 33.35	—	—	13 48 53.35	—	—	—		Fehler des Drucks.
	53 13.30	—	—	52 13.30	—	—	—		Bemerk. recht.
	54 52.40	—	—	53 52.40	—	—	—		″ ″
	55 16.10	—	—	54 16.10	—	—	—		″ ″
463.	31 27 24.25	—	—	13 27 24.25	—	—	—		Abthl. XV.
	13 34 30.30	—	—	—	63	1067	—		Fehler des Drucks.
	49 43.41	—	—	—	—	—	+38 36 38.0		″ ″ ″
	51 29.56	—	—	51 39.56	—	—	—		″ ″ ″
464.	14 6 16.70	—	—	14 6 15.70	—	—	—		Abthl. XV.
	14 0.45	—	—	—	—	—	+26 51 24.0		Fehler des Drucks.
465.	11 52 29.54	—	—	11 52 39.54	—	—	—		130.
	57 30.60	—	—	58 30.60	—	—	—		
	58 13.56	—	—	59 13.56	—	—	—		
	58 2.39	—	—	59 2.39	—	—	—		131.
	12 14 7.55	—	—	—	55	875	—		Abthl. XV.
	34 43.98	—	—	12 34 41.98	—	—	—		132.
466.	13 34 57.75	—	—	—	—	—	+35 58 45.2		Fehler des Drucks.
	37 44.60	—	—	—	—	—	+35 30 49.6		″ ″ ″
	46 27.56	—	3	13 46 45.20	—	—	—		
	49 49.84	—	—	49 39.84	—	—	—		Fehler des Drucks.
	14 6 28.71	—	—	14 6 21.71	—	—	—		Fehler des Drucks.
467.	12 4 49.69	—	—	—	55	1182	—		Abthl. XV.
	31 31.70	—	—	—	—	—	+22 28 27.5		Fehler des Drucks.
	50 2.50	—	—	—	—	—	+22 59 21.3		Abthl. XV.
	13 11 8.32	—	—	13 11 8.32	—	—	—		Bemerk. verfällt.
	12 35.91	—	—	13 35.91	—	—	—		Bemerk. recht.
	15 18.36	—	—	—	—	—	+22 29 53.1		Fehler des Drucks.
	20 43.87	—	—	—	71	1392	—		″ ″ ″
468.	12 15 29.30	—	—	12 15 19.30	—	—	—		
	42 55.28	—	—	42 55.26	45	1134	+29 45 16.1		
	57 59.51	—	—	—	—	—	+28 59 54.7		Fehler des Drucks.
	13 12 19.50	—	—	—	—	—	+28 53 14.4		″ ″ ″
	38 24.57	—	—	18 38 23.57	—	—	—		Bemerk. recht.
469.	12 27 6.47	—	—	12 27 6.36	63	896	+40 37 56.5		
	13 31 21.73	—	—	13 31 11.73	—	—	—		
	14 0 32.27	—	—	—	—	—	+39 36 23.1		Fehler des Drucks.
470.	12 36 20.20	—	—	—	—	—	—		133.
	13 0 13.04	—	—	13 0 23.04	—	—	—		Fehler des Drucks.
471.	14 1 16.57	—	—	14 2 16.57	—	—	—		Minute fehlt im Orig.
	3 16.64	—	—	3 6.64	—	—	—		
	4 25.26	—	—	—	—	—	—	} Duplex	
	4 26.00	—	—	—	—	—	—		Fehler des Drucks.
	14 14.40	—	—	14 14.50	—	—	—		Abthl. XV.
472.	14 4 0.10	—	—	—	—	—	+41 58 10.9		Fehler des Drucks.
	17 52.23	—	—	—	31	1447	—		Abthl. XV.
	21 57.50	—	—	—	29	1250	—		″ ″
	43 29.12	—	—	14 44 29.12	—	—	—		Fehler des Drucks.
	15 1 12.75	—	—	—	—	—	+42 27 21.5		″ ″ ″
473.	14 26 18.67	—	—	14 26 28.67	—	—	—		″ ″ ″
	29 58.38	—	—	—	—	—	+43 35 1.0		Abthl. XV.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
473.	14 30 12.00	—	—	—	—	—	+44 27 58.3		Abthl. XV.
	31 19.80	—	—	—	—	—	+44 23 10.9		
	58 2.50	—	—	14 59 2.50	—	—	—		Fehler des Drucks.
	15 2 49.28	—	—	—	48	1006	—		Abthl. XV.
	7 27.66	—	—	—	—	—	+43 41 22.1		Fehler des Drucks.
	17 27.58	—	—	15 17 28.09	59	1180	+44 27 33.0		
474.	14 54 31.85	9	—	—	—	—	—		Abthl. XV.
	15 20 13.40	—	—	15 20 13.40	—	—	—		Bemerk. verfällt.
	48 22.54	—	—	48 22.10	72	1137	+20 55 55.7		
475.	15 38 43.78	—	—	—	—	—	+34 42 5.0		Fehler des Drucks.
	43 1.15	—	—	15 43 0.15	—	—	—		Bemerk. recht.
	43 10.51	—	—	43 10.51	—	—	—		Bemerk. verfällt.
	16 0 13.65	—	5	59 56.23	—	—	—		Bemerk. recht.
	5 24.38	—	—	—	56	1608	+33 41 11.1		Bemerk. verfällt.
	18 24.57	—	—	—	—	—	+33 17 55.5		Abthl. XV.
	37 33.75	—	—	—	—	—	+33 38 42.2		Fehler des Drucks.
476.	16 8 55.71	—	—	—	—	—	+39 49 15.9		
	16 52.50	—	—	—	51	1622	—		Abthl. XV.
	57 52.59	—	—	16 57 32.59	—	—	—		Fehler des Drucks.
	17 12 18.60	—	—	—	—	—	+40 58 51.1		
477.	16 4 49.37	—	—	16 4 49.37	—	—	—		Bemerk. verfällt.
	34 18.06	—	—	—	—	—	+25 46 3.5		Fehler des Drucks.
	54 29.23	—	—	—	—	—	+25 58 31.2		
	17 6 18.88	—	—	17 6 18.88	—	—	—		Bemerk. verfällt.
	6 34.19	—	—	6 34.19	—	—	—		
	13 32.35	—	—	—	—	—	+26 9 17.9		Abthl. XV.
	24 16.37	—	—	24 16.37	—	—	—		Bemerk. verfällt.
	24 43.60	—	—	24 43.60	—	—	—		
	35 18.91	—	—	—	—	—	+26 59 10.0		Fehler des Drucks.
	38 30.69	—	—	—	—	—	+25 32 20.6		
	49 13.55	—	—	49 3.55	—	—	—		134.
	51 8.36	—	—	51 38.36	—	—	—		
	18 0 4.07	—	—	18 0 3.07	—	—	—		Bemerk. recht.
478.	17 34 7.40	—	—	17 33 57.40	—	—	—		
	56 28.14	—	—	56 28.14	—	—	—		Bemerk. verfällt.
	56 23.31	—	—	56 13.31	—	—	—		135.
	18 22 14.00	—	—	—	46	1954	+44 9 16.1		
	32 54.30	—	—	—	—	—	+44 40 0.2		Fehler des Drucks.
479.	17 35 12.20	—	—	17 34 12.20	56	1240	—		Abthl. XV.
	34 28.99	—	—	35 28.99	—	—	—		Fehler des Drucks.
	17 51 22.50	—	—	—	—	—	+32 49 10.5		Abthl. XV.
	18 1 33.13	—	—	—	—	—	—		136.
	14 25.60	—	—	—	—	—	+32 10 41.2		Fehler des Drucks.
	16 49.12	—	—	—	67	1058	—		
	17 36.50	—	—	—	—	—	+31 5 3.4		
	19 46.40	—	—	—	52	1439	—		Abthl. XV.
	21 37.20	—	—	—	—	—	—		137.
	30 9.28	—	—	—	45	978	—		Abthl. XV.
480.	17 41 13.60	—	—	17 41 3.60	—	—	—		Bemerk. recht.
	18 20 45.12	—	—	18 25 45.12	—	—	—		Fehler des Dsucks.
	25 38.90	—	—	26 38.90	—	—	—		Fehler des Drucks.
481.	18 19 26.00	—	—	18 19 26.00	—	—	—		
	46 1.70	—	—	—	68	1247	—		Abthl. XV.
482.	18 44 58.60	—	—	—	—	—	+43 3 5.4		Fehler des Drucks.
483.	17 39 9.98	—	—	17 39 9.98	—	—	—		Bemerk. verfällt.
	48 27.52	8	—	—	—	—	—		Abthl. XV.
	18 2 28.45	—	—	—	—	—	+39 8 1.4		Fehler des Drucks.
	24 43.71	—	—	—	67	1489	—		Abthl. XV.
	45 7.22	—	3	18 45 26.20	—	—	—		
	48 39.48	—	—	—	28	1506	—		Abthl. XV.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
483.	19 9 0.70	—	—	—	—	—	+40 45 13.0		Abthl. XV.
484.	18 41 33.45	—	—	18 41 3.45	—	—	—		" "
	44 4.27	—	—	—	—	—	+31 10 6.0		" "
	19 28 28.98	—	—	19 28 28.98	—	—	—		Bemerk. verfällt.
	29 25.76	—	—	29 25.77	68	752	+31 9 53.9		138.
	30 28.89	—	—	—	—	—	+31 32 —		
	37 42.91	—	—	—	—	—	+32 25 29.6		Fehler des Drucks.
	52 13.27	—	—	53 3.27	—	—	—		
485.	18 47 36.19	—	—	—	—	—	—		" " "
	53 31.30	—	—	18 53 41.30	—	—	—		139. Fehler des Drucks.
	19 1 33.40	—	—	—	—	—	+43 35 7.0		Fehler des Drucks.
	2 43.40	—	—	—	—	—	+43 46 40.0		Abthl. XV.
	7 55.97	—	—	19 8 5.97	—	—	—		Fehler des Drucks.
	11 41.62	—	—	11 31.62	—	—	—		
486.	19 18 47.41	—	—	19 18 45.41	—	—	—		Fehler des Drucks.
	35 28.69	—	—	35 28.69	—	—	—		Bemerk. verfällt.
	45 18.26	—	—	45 8.26	—	—	—		
	20 12 42.30	—	—	—	28	1002	—		Abthl. XV.
	16 14.75	—	—	—	—	—	—		
	16 15.29	—	—	—	—	—	—	} Derselbe	
487.	18 58 15.30	—	—	—	52	1797	—		Fehler des Drucks.
	19 15 9.20	—	4	19 14 50.43	—	—	—		
	41 19.00	—	—	—	—	—	+37 53 27.7		Fehler des Drucks.
	44 15.97	—	—	—	—	—	+38 17 56.3		Abthl. XV.
488.	23 13 1.76	—	—	—	54	1476	+24 13 51.9		Fehler des Drucks. Abthl. XV.
	36 48.39	—	—	23 36 32.52	—	—	—		Fehler des Drucks. vergl. Note 5.
	40 22.20	—	—	—	—	—	—		Bemerk. verfällt.
489.	7 4 2.91	—	—	7 4 2.91	—	—	—		
	12 25.85	—	—	12 15.85	—	—	—		" " Fehler des Drucks.
	8 3 35.50	—	2	8 3 55.27	—	—	—		
490.	6 57 21.90	—	—	—	56	1432	+37 42 21.2		
	7 1 53.00	—	—	—	—	—	+37 53 54.7		Abthl. XVI.
	10 22.60	—	—	—	—	—	+39 6 5.2		Fehler des Drucks.
492.	7 10 44.30	—	—	7 10 54.30	—	—	—		
	38 13.87	—	—	39 13.87	—	—	—		
	39 27.46	—	—	40 27.46	—	—	—		
	39 45.57	—	—	40 45.57	—	—	—		
	39 52.30	—	—	40 52.30	—	—	—		
	46 30.20	—	—	46 30.20	—	—	—		
	8 6 52.17	—	—	8 7 2.17	—	—	—		Bemerk. verfällt.
	28 45.30	—	—	—	—	—	+41 57 31.2		Fehler des Drucks.
	34 3.76	—	—	31 3.76	—	—	—		Abthl. XVI.
	35 29.50	—	—	32 29.50	—	—	—		
493.	8 8 20.96	—	—	8 8 10.96	—	—	—		Fehler des Drucks.
494.	8 45 4.90	—	—	8 45 4.90	—	—	—		Bemerk. verfällt.
	9 18 52.37	—	—	—	55	1271	+43 46 25.0		
495.	10 1 42.76	—	—	—	75	1134	+32 47 7.1		
	31 44.44	—	—	10 31 34.44	—	—	—		
496.	10 53 30.70	—	—	10 53 20.70	—	—	—		
497.	9 28 32.12	—	—	—	—	—	+43 54 22.7		Fehler des Drucks.
	10 40 54.53	—	—	10 41 54.43	—	—	—		Fehler des Drucks. Abthl. XVII.
	11 6 29.44	—	—	11 6 39.44	—	—	—		
	6 26.50	—	—	6 36.50	—	—	—		
498.	10 24 24.42	—	—	10 24 34.42	—	—	—		Bemerk. recht.
	11 18 8.19	—	—	11 17 58.19	—	—	—		
500.	10 2 20.88	—	—	10 2 10.88	—	—	—		
	3 12.29	—	—	3 2.29	—	—	—		Bemerk. recht.
	31 6.83	—	—	31 6.83	—	—	—		Bemerk. verfällt.
	31 54.80	—	—	—	—	—	+26 35 10.0		Fehler des Drucks.
	45 44.38	—	—	45 54.38	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
500.	10 46 40.29	—	—	10 46 50.29	—	—	—		
	46 41.10	—	—	46 51.10	—	—	—	Zeit +10″	Bemerk. recht.
	48 16.50	—	—	48 26.50	—	—	—		
	48 58.98	—	—	49 8.98	—	—	—		Bemerk. recht.
	11 0 44.50	—	—	11 0 54.50	—	—	—		
	7 49.50	—	—	—	—	—	+26 44 30.9		Abthl. XVII.
	23 25.00	—	—	23 22.00	—	—	—		140.
501.	10 21 7.13	—	—	—	48	1050	—		Bemerk. verfällt.
	11 27 27.19	—	3	11 27 10.30	—	—	—		
502.	10 11 5.70	—	—	—	—	—	—	Duplex 2″	Abthl. XVII.
	13 6.30	—	—	—	—	—	—		Bemerk. verfällt nach Abthl. XVII.
	16 16.45	—	—	10 16 46.45	—	—	—		Fehler des Drucks.
	19 4.45	—	—	19 14.45	—	—	—		
	59 15.59	—	3	59 0.20	—	—	—		
	59 54.20	—	4	59 38.70	—	—	—		
	11 0 36.80	—	4	11 0 21.31	—	—	—		141.
	2 6.64	—	3	1 51.20	—	—	—		
	4 4.00	—	3	3 48.50	—	—	—		
	4 21.97	—	5	4 6.37	—	—	—		
	46 9.00	—	—	46 9.01	47	1015	+19 52 7.8		
	51 52.52	—	—	51 52.52	—	—	—		Bemerk. verfällt.
503.	11 48 43.41	—	—	—	—	—	+25 39 42.1		Fehler des Drucks.
	59 59.59	—	—	11 59 59.30	—	—	—		Abthl. XVII.
	12 13 10.92	—	—	12 13 10.98	37	1222	+26 40 0.6		
	13 47.75	—	4	14 3.89	—	—	—		142.
	15 35.66	—	—	—	60	996	+25 32 18.0		
	24 36.94	—	—	24 26.94	—	—	—		143.
	25 23.30	—	—	25 13.30	—	—	—	—10″ Zeit?	Bemerk. recht.
504.	12 32 46.52	—	—	—	—	—	+43 42 28.7		Fehler des Drucks.
	44 52.21	—	—	—	54	1221	+43 48 59.6		
	47 12.86	—	—	12 48 12.86	—	—	—		
	48 6.88	—	—	49 6.88	—	—	—		
	49 11.33	—	—	50 11.33	—	—	—		144.
	13 17 35.61	—	—	13 17 25.61	—	—	—		
505.	4 12 38.04	—	—	4 12 8.04	—	—	—		
	29 8.37	—	—	28 58.37	—	—	—		
	55 20.13	—	—	56 20.13	—	—	—		Fehler des Drucks.
	5 24 55.93	—	—	5 24 55.79	59	1543	+39 31 45.1		
506.	2 29 22.23	—	—	2 29 32.23	—	—	—		
507.	5 6 28.50	—	—	5 6 18.50	—	—	—		
	48 43.50	—	—	—	—	—	+27 35 34.6		Fehler des Drucks.
	50 18.73	—	—	50 17.73	—	—	—		Bemerk. recht.
	6 24 58.65	—	—	—	48	1310	+28 9 4.7		145.
	34 6.31	—	—	6 34 6.31	—	—	—		Bemerk. verfällt.
508.	2 33 15.34	—	—	—	66	1377	+35 14 44.6		
	40 31.49	—	—	2 40 31.47	47	730	+36 15 26.1		
	44 57.22	—	—	44 56.22	—	—	—		Bemerk. recht.
	50 50.41	—	5	50 32.84	—	—	—		″ ″
	51 19.00	—	5	51 1.31	—	—	—		″ ″
	59 2.10	—	—	58 44.13	—	—	—		Fehler des Drucks. vergl. Note 5.
	3 1 6.50	—	—	3 1 26.50	—	—	—		
	15 58.61	—	—	16 58.61	—	—	—		Fehler des Drucks.
	34 10.42	—	—	—	—	—	+35 19 20.8		″ ″ ″
	49 31.49	—	—	49 21.49	—	—	—		
	56 33.48	—	—	56 32.81	34	1521	+36 49 55.3		
509.	5 30 6.42	—	—	5 36 6.42	—	—	—		Fehler des Drucks.
	37 40.96	—	—	37 40.67	42	1256	+40 24 23.5		146.
	47 55.50	—	—	—	56	832	+39 44 48.7		147.
	6 12 14.68	—	—	—	39	831	—		Abthl. XVII.
	21 29.40	—	—	—	36	1044	—		″ ″

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
509.	6 35 10.10	—	—	6 35 11.10	—	—	—		Bemerk. recht.
	44 13.30	—	4	43 54.61	—	—	—		
	58 1.28	—	—	58 1.25	56	1614	+39 40 21.0		
510.	3 2 56.78	—	—	—	—	—	+42 16 27.2		Abthl. XVII.
	18 28.50	—	—	3 18 38.50	—	—	—		″ ″
	35 6.02	—	—	35 9.02	—	—	—		
	43 29.33	—	—	43 29.30	50	882	+42 2 36.7		148.
	4 17 57.69	—	—	4 17 42.39	—	—	—		149.
	34 20.62	—	—	34 20.43	29	1055	+43 4 37.5		
511.	5 41 53.69	—	—	5 42 53.69	—	—	—		
	43 9.63	—	—	44 9.63	—	—	—		
	43 7.64	—	—	44 7.64	—	—	—		
	48 35.49	—	—	48 35.49	—	—	—		Bemerk. verfällt.
	52 24.64	—	—	52 24.54	—	—	—		Abthl. XVII.
	6 4 44.28	—	—	6 5 4.29	—	—	—		vergl. Note 5.
	50 28.91	—	—	50 18.91	—	—	—		
512.	2 36 58.34	—	—	2 35 58.34	—	—	—		Fehler des Drucks.
	3 22 46.52	—	—	3 22 36.52	—	—	—		
	23 47.79	—	—	23 37.79	—	—	—		
	42 21.80	—	—	—	—	—	+40 41 10.6		Abthl. XVII.
513.	5 7 5.77	—	—	—	—	—	+31 5 1.4		Fehler des Drucks.
	29 50.86	—	—	5 29 50.86	—	—	—		Bemerk. verfällt.
	59 9.22	—	—	58 59.22	—	—	—		
	6 10 6.53	—	—	6 9 6.53	—	—	—		150.
514.	3 40 36.22	—	—	3 40 36.19	33	912	+44 56 23.2		Bemerk. verfällt, vergl. Note 143.
	51 49.88	—	—	51 49.98	59	1140	+43 37 5.2	Decl. unsicher	Bemerk. recht.
	4 42 55.20	—	—	—	71	901	+43 2 27.0		151.
	5 1 35.20	—	—	—	29	1502	+45 5 1.3		
	3 2.70	—	4	5 2 42.49	—	—	—		
	9 21.40	—	—	—	29	1467	+45 5 13.3		
515.	5 14 53.30	—	—	5 14 55.30	—	—	—		Bemerk. recht.
	43 32.47	—	—	—	—	—	—		
	43 33.56	—	—	—	—	—	—	} Dupl. 20″	Abthl. XVII.
516.	4 37 36.71	—	—	—	44	1445	+42 17 18.2		
	5 0 45.41	—	—	5 0 55.41	—	—	—		Fehler des Drucks.
	1 44.92	—	—	1 54.92	—	—	—		″ ″ ″
	2 51.40	—	—	2 41.40	—	—	—		
	6 15 12.28	—	—	—	—	—	+42 2 47.3		Fehler des Drucks.
	58 24.30	—	—	—	—	—	+41 53 14.4		″ ″ ″
517.	5 4 40.20	—	—	—	66	1290	—		Abthl. XVII.
	7 25.03	—	5	5 7 8.07	—	—	—		
	8 29.59	—	3.4	8 12.40	—	—	—		} 152.
	8 39.12	—	5	8 21.97	—	—	—		
	9 32.20	—	—	9 22.20	—	—	—		
518.	5 34 25.40	—	4	5 34 7.93	—	—	—		
	6 0 30.10	—	—	6 0 39.10	—	—	—		Fehler des Drucks.
	1 19.73	—	—	—	—	—	—		153.
	16 3.80	—	—	—	—	—	—		
	16 3.67	—	—	—	—	—	—	} Derselbe	
	29 29.90	—	—	29 19.90	—	—	—		
	32 50.03	—	—	32 50.03	—	—	—		Bemerk. verfällt.
	38 27.30	—	—	38 17.30	—	—	—		
519.	4 5 18.61	—	—	—	—	—	+41 10 38.3		Fehler des Drucks.
	15 32.12	—	—	4 15 32.12	—	—	—		Bemerk. verfällt.
	27 2.50	8	—	—	—	—	—		Fehler des Drucks.
	5 1 23.06	—	—	5 1 23.90	30	1302	+41 0 9.6		
	23 0.60	—	—	22 50.60	—	—	—		
520.	5 58 27.37	—	4	5 58 43.83	—	—	—		
	6 53 54.75	—	—	—	—	—	+26 56 29.1		Abthl. XVII.
521.	5 19 0.51	—	—	5 20 0.51	—	—	—	+1″?	Bemerk. recht.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u , "			u , "			° , "		
521.	5 19 0.61	—	—	5 20 0.61	—	—	—	+1'?	Bemerk. recht.
	20 7.40	—	—	30 7.40	—	—	—		Fehler des Drucks.
522.	4 27 54.91	—	—	—	—	—	+41 17 10.0		" " "
	29 17.38	—	—	4 29 17.28	—	—	—		Abthl. XVII.
	33 21.53	—	—	—	48	1380	+42 5 43.7		154.
	5 49 8.06	—	—	5 49 18.06	—	—	—		Fehler des Drucks.
	58 4.18	—	—	57 54.18	—	—	—		Bemerk. recht.
	6 15 31.10	—	—	—	—	—	+42 2 51.8		Fehler des Drucks.
	24 3.49	—	—	—	—	—	+41 49 20.1		" " "
	36 2.20	—	—	6 36 2.30	—	—	—		Abthl. XVII.
523.	5 22 4.45	—	—	5 22 9.45	—	—	—		Bemerk. recht.
	58 55.20	—	—	58 54.20	—	—	—		" "
	6 9 3.42	—	—	6 9 13.42	—	—	—		
	15 15.71	—	1	15 31.71	—	—	—		Abthl. XVII.
	15 59.50	—	3	15 59.50	—	—	—		Bemerk. verfällt.
	16 47.48	—	2	16 47.48	—	—	—		" "
	16 51.15	—	4	16 51.15	—	—	—		" "
	26 58.01	—	—	26 59.01	—	—	—		Bemerk. recht.
	53 20.23	—	—	53 10.23	—	—	—	Zeit —10"?	" "
524.	5 13 44.67	—	—	5 13 44.67	—	—	—		Bemerk. verfällt.
	15 46.36	—	—	15 56.36	—	—	—		
	20 31.76	—	—	20 31.76	—	—	—		Bemerk. verfällt.
	28 44.10	—	—	—	—	—	+23 2 11.2		Fehler des Drucks.
	59 21.83	—	—	59 31.83	—	—	—		
	59 45.10	—	—	59 55.10	—	—	—		Bemerk. recht.
	6 9 4.46	—	—	—	—	—	+22 28 15.0		Abthl. XVII.
	9 51.01	—	—	6 9 41.01	—	—	—		
	22 11.88	—	—	22 11.88	—	—	—		Bemerk. verfällt.
	26 54.20	—	—	—	—	—	+21 1 33.3		
	31 33.20	—	—	31 43.20	—	—	—		
525.	5 13 42.22	—	5	5 13 35.41	—	—	+30 59 —	=d. vorletzten	155.
	38 7.54	—	—	—	—	—	+31 19 10.8		Abthl. XVII.
	6 41 4.58	—	—	6 41 4.49	50	954	+32 0 36.4		
	44 44.75	—	—	—	—	—	+31 42 30.4		Fehler des Drucks.
526.	10 32 14.48	—	4	10 32 31.04	—	—	—		156.
	57 28.50	—	4	57 11.94	—	—	—		
	11 2 45.32	—	—	11 2 45.33	44	1367	+27 44 58.7		
	29 55.45	—	—	30 55.45	—	—	—		157.
	48 40.11	—	—	48 40.07	24	1526	+26 45 53.1		
527.	1 33 57.02	—	—	1 23 57.02	—	—	—		Fehler des Drucks.
	33 58.19	—	—	33 58.20	27	1210	+36 49 47.8		158.
	47 54.50	—	—	47 44.50	—	—	—		Bemerk. recht.
	51 30.32	—	—	51 20.32	—	—	—		
	2 8 42.03	—	—	2 8 42.04	72	1037	+39 3 48.5		
	22 47.71	—	—	23 7.71	—	—	—		Fehler des Drucks.
528.	1 24 41.56	—	—	1 24 41.57	61	830	+40 32 37.4		
	32 8.50	—	—	—	59	1142	+40 28 24.1		
	58 7.50	—	—	58 17.50	—	—	—		Fehler des Drucks.
	2 2 32.42	—	—	—	—	—	+40 0 27.2		" " "
	7 9.16	—	—	—	—	—	—		159.
	15 53.54	—	—	2 16 53.29	59	1429	+40 30 2.3		160.
	17 15.60	—	—	18 15.60	—	—	—		} 161.
	18 3.30	—	—	19 3.30	—	—	—		
	18 38.40	—	—	19 38.40	—	—	—		
	23 0.20	—	—	23 10.20	—	—	—		Fehler des Drucks.
	39 4.15	—	—	38 54.15	—	—	—		
	39 17.31	—	—	39 7.31	—	—	—		
	40 10.20	—	—	40 0.20	—	—	—		
	40 17.39	—	—	40 7.39	—	—	—		
	41 45.75	—	—	41 35.75	—	—	—		

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
528.	2 41 53.10	—	—	2 41 43.10	—	—	—		
529.	1 57 22.58	—	—	1 57 22.58	—	—	—		Bemerk. verfällt.
	57 40.73	—	—	57 40.73	—	—	—		„ „
	58 23.85	—	—	58 23.85	—	—	—		„ „
	58 34.88	—	—	58 34.88	—	—	—		„ „
	2 36 11.43	—	3	2 35 51.70	—	—	—		
530.	2 11 24.58	—	—	2 11 24.58	—	—	—		Bemerk. verfällt.
	25 36.35	—	—	26 36.35	—	—	—		
	25 39.67	—	—	26 39.67	—	—	—		
	34 23.90	—	—	34 23.90	—	—	—	} Derselbe	
	34 33.22	—	—	34 23.22	—	—	—		
	47 20.45	—	—	47 20.49	73	1511	+25 12 21.6		
	3 31 0.47	—	—	3 30 59.47	—	—	—		Bemerk. recht.
531.	2 5 53.70	—	—	2 6 53.70	—	—	—		Fehler des Drucks.
	33 9.19	—	—	—	67	1340	—		Abthl. XVII.
	37 38.48	—	—	37 38.47	61	1033	+44 33 42.0		
	39 53.04	—	—	40 3.04	—	—	—		
	41 1.90	—	—	41 11.90	—	—	—		
	47 4.98	—	—	46 54.98	—	—	—		
	49 45.56	—	—	—	—	—	—		162.
532.	1 32 48.74	—	—	—	—	—	+30 11 23.4		Fehler des Drucks.
	2 14 40.50	—	—	—	61	1362	+30 32 31.9		
	20 36.40	—	—	—	49	1061	+29 54 48.9	Decl. ?	Bemerk. recht.
	51 40.40	—	—	2 51 30.40	—	—	—		
	53 8.70	—	—	52 58.70	—	—	—	} Derselbe	
	52 58.99	—	—	—	—	—	—		
533.	2 7 36.40	—	—	—	60	1397	+34 32 43.6		163.
	9 59.71	—	—	2 9 59.70	53	1292	+34 11 7.7		
	25 3.09	—	—	25 3.07	49	1026	+33 57 36.7		
	25 6.87	—	—	25 6.85	50	880	+33 59 46.8		
	28 6.93	—	—	28 6.92	60	967	+34 30 16.5		
	39 7.40	—	—	—	47	1342	+33 53 24.8		
	39 58.40	—	—	—	63	1463	+34 42 6.1		
	41 53.05	—	3	41 35.40	—	—	—		
	3 18 50.19	—	—	—	—	—	—		164.
	24 36.60	—	—	3 25 36.60	—	—	—		165.
	24 41.22	—	—	25 41.21	59	1432	+34 29 55.6		
	25 13.19	—	—	26 13.19	—	—	—		
	25 54.10	—	—	26 54.10	61	1772	+34 37 51.8		
	26 45.60	—	—	27 45.60	—	—	—		
	27 45.69	—	—	28 45.69	—	—	—		
	27 41.90	—	—	28 41.90	—	—	—		
	29 8.27	—	—	30 8.27	—	—	—		Fehler des Drucks.
	30 45.34	—	—	30 45.36	60	1143	+34 31 16.7		
534.	1 29 16.46	—	—	1 29 16.47	55	1380	+32 17 41.7		
	2 21 43.20	—	—	—	36	1574	+31 21 48.0		
	44 12.09	—	—	2 45 12.09	—	—	—		Fehler des Drucks.
	59 1.51	—	—	3 0 1.51	—	—	+31 35 33.8		„ „ „
	3 31 21.67	—	—	—	—	—	+32 24 29.5		„ „ „
535.	1 52 41.40	—	—	—	49	1286	+27 59 6.9		
	2 21 58.48	—	—	2 21 58.54	45	1769	+27 49 52.1		
	45 46.91	—	—	45 45.91	—	—	—		166.
536.	2 9 33.29	—	—	2 9 32.95	61	1725	+30 34 36.6		167.
	28 8.26	—	—	—	—	—	—	} Derselbe	
	28 8.65	—	—	—	—	—	—		
	29 34.60	—	—	29 34.60	—	—	—		Bemerk. verfällt.
	37 44.00	—	—	37 43.99	59	1943	+30 29 51.2		
	38 10.50	—	—	—	—	—	+30 25 39.0		Fehler des Drucks.
	53 48.18	—	—	53 58.18	—	—	—		„ „ „
	3 21 29.40	—	—	—	29	1590	+28 57 50.4		

Nachtrag.

Zone	Durchgangszeit	Grösse	Fad.	Durchgangszeit	Mikroskop Scale	Mikroskop Schraube	Declination	Bemerkungen	Anmerkungen
No.	u ′ ″			u ′ ″			° ′ ″		
1.	19 12 32.52	—	—	19 12 30.52	—	—	—		Bemerk. recht.
96.	18 14 3.19	—	—	18 14 5.19	—	—	—		„ „
444.	1 45 58.75	—	—	1 45 48.75	—	—	—		Fehler des Drucks.
450.	9 43 20.11	—	1	—	—	—	—		„ „ „
503.	11 53 15.44	—	—	11 53 5.44	—	—	—		

Bemerkungen zu dem vorstehenden Verzeichniss.

1. Obgleich dieser Stern in 2 Zonen übereinstimmend vorkommt, so ist der Strich doch gewiss beide Male falsch. Uncorrigirt geben die Zonen für 1855 die Declination —1° 2′.4 während die Durchmusterung aus 3 gut übereinstimmenden Beobachtungen —0° 59′.6 und eine Meridianbeobachtung 1856 Aug. 9. —0° 59′.4 giebt. Die Angabe der Schraube 1212 in Z. 1. ist ein Druckfehler statt 1217, wie auch schon die Secunden der berechneten Declination zeigen.
2. Das Original hat an Fad. II. 13′ 39″.3 an Fad. IV. 14′ 7″.3. Der erstere giebt für den Durchgang 53″.94, der andre 52″.98, und Fad. II. ist um 1″ verzählt; wahrscheinlich hatte Bessel dies auch bemerkt, und desshalb noch IV. beobachtet.
3. Das Original hat über den Secunden einen Strich, wodurch die Bemerkung AR?, die dort fehlt, wohl entstanden ist; ich vermuthe, dass der Strich bedeuten soll, die beiden letzten Ziffern seien verstellt, und also 13.5 zu lesen, wodurch die AR. mit einer Bonner Meridianbeobachtung in Uebereinstimmung kommt.
4. Das Original hat 33 1000, aber die Bemerkung „es stand 100“, so dass also eine 1 am Anfange und nicht eine 0 am Ende vergessen war.
5. Der Stern ist um 22ᵘ 35′ 18″.5 an Fad. IV. beobachtet, aber mit dem Intervall des 5ten Fadens fälschlich reducirt.

   Wenn ein gleiches Versehn später vorgekommen ist, so wird in solchem Falle weiterhin nur bemerkt werden: vergl. Note 5.
6. Im Original steht Fad. II. 1′ 20″.3 Fad. IV. 58″.3 aber die Minute ist später geschrieben, und muss nothwendig 0 sein, da um 1′ 21″.5 schon der folgende nahe 2° nördlichere Stern beobachtet ward. Die Secunde 20.3 ist offenbar auch falsch, und muss 29.3 heissen, womit Bessel auch gerechnet hat.
7. Das Original hat deutlich 10′ 4″.0 an Fad. V. was für den Durchgang 6ᵘ 9′ 34″.68 giebt; es muss aber nothwendig ein Fehler von 2″ vorgefallen sein; vielleicht hat Bessel einen Fehler von 1″ nach der falschen Seite corrigirt. Die Beob. in Z. 56. 6ᵘ 9′ 40″.41, Lalande, sowie 4 Cometensucher – und eine Revisionszone von uns fordern übereinstimmend die Correction.
8. Das Original hat Fad. III. 58″.9 Fad. IV. 59′ 3″.4; Bessel hat also den erstern für den richtigen gehalten, während dieser 10″ falsch und Fad. IV. richtig ist.
9. Das Original hat 46′ 44″.4 an Fad. II. was für den Durchgang 59″.48 giebt; ich halte es aber für gewiss, dass eine Verschreibung statt 40″.4 Statt gefunden hat, wie es LL., 3 Beobachtungen von Rümker, unsre Durchmusterung und eine Meridianbeobachtung 1859 März 28. übereinstimmend fordern. Bei den vielen Vieren ist solche Verschreibung leicht erklärlich.
10. Das Orig. hat Fad. IV. 34″.2 Fad. V. 47″.3, woraus Bessels doppelte Angabe entstanden ist; LL. und eine Bonner Meridianbeobachtung entscheiden für Fad. V., weshalb ich Fad. IV. um —2″ corrigirt habe.
11. Nach dem Orig. ist der Stern um 58′ 14″.2 an Fad. II. beobachtet, und Bessel hat vergessen die Reduction auf den Mittelfaden hinzuzufügen.

    Wenn ein gleiches Versehn später statt gefunden hat, wird bemerkt werden: vergl. Note 11.
12. Hussey in den Anmerkungen zu dem Sternverzeichnisse der Berliner Charte und nach ihm Bessel in Abthl. XIV. giebt

an, dass die Durchgangszeit dieses Sterns um 10″ zu vergrössern sei; es ist dies ein reines Versehen: sie muss, wie die des vorhergehenden, um 10″ vermindert werden. Auch hat Hussey in dem Sternverzeichnisse selbst den Stern an seiner richtigen Stelle eingetragen in 14ᵘ 46′15″ +4° 14′.1 für 1800.

13. Das Original hat für beide Sterne die Minute 58, aber bei dem dem 2ten unmittelbar folgenden Sterne ist die Zeit um eine Minute corrigirt, und derselbe Fehler hat also auch schon bei diesen beiden Sternen stattgefunden.
14. In Abthl. XIV. nach dem Druckfehlerverzeichniss der Abthl. VIII. ist die Durchgangszeit in 15ᵘ 18′ 10″.99 corrigirt. Es ist dies aber wohl wieder ein Druckfehler: denn der Stern ist nach dem Original an Fad. I. um 52″.2 beobachtet, was für den Durchgang durch den mittlern Faden 20″.99 giebt, und damit stimmt auch eine Bonner Meridianbeobachtung 1854 Mai 20.
15. Die Angabe der Scalentheile 69 ist im Original unterstrichen, wohl zum Zeichen, dass dagegen ein Zweifel gehegt wurde. Da der Stern nur 16″ nach dem vorhergehenden und 30″ vor dem folgenden beobachtet wurde, so kann Bessel in dieser Zeit unmöglich einen um 2° südlichern Stern beobachtet haben.
16. Der Stern ist um 17ᵘ 26′ 45″.3 an Fad. II. beobachtet, also sind wohl bei der Reduction aus Versehn nur die Hundertheile der Secunde angesetzt, die Reduction der Secunden und Zehntel vergessen worden.
17. Die falsche Zeitminute ist ein Druckfehler, die Scalentheile stehn zwar im Original wie im Druck, müssen aber nothwendig 29 sein, da schon 3″.5 nach dem Fadenantritte der folgende Stern bei 6° 58′ Declination beobachtet ward.
18. Im Original ursprünglich Fad. II., nachher fälschlich in Fad. III. corrigirt.
19. Im Original bei diesen Sternen die Minuten 21 bis 24; bei dem dem letzten von ihnen folgenden Sterne stand ursprünglich 25, woraus dann 46 gemacht ist; die Correction von 21′ hätte auch den 7 Sternen beigefügt werden sollen, nicht bloss 20′. Die Schraubentheile beim 4ten Sterne im Original wie im Druck.
20. Eine solche Verbesserung ist Abthl. XIV. angegeben, und muss daher wohl in einigen Exemplaren eine andre Decl. stehen; in zweien, die ich verglichen habe, steht die richtige.
21. Im Original wie im Druck, aber bei dem nächstfolgenden Sterne hat auch ursprünglich die Minute 56 gestanden, und ist nachher, wie der Druck hat, in 57 corrigirt worden. Dieselbe Correction hätten also auch diese 3 Sterne erhalten sollen.
22. Für diesen Stern hat Bessel in Abthl. XIV. auf meine Autorität die Decl. um —15 Scalentheile corrigirt; der Stern, mit dem ich auf diese Weise in Abo die Beobachtung in Uebereinstimmung zu bringen glaubte, weicht von derselben, wenn so corrigirt, um 12″ in AR. und 2′ in Declination ab; es ist der Stern +11° Nr. 4753 der Durchmusterung. Desshalb habe ich in der Beilage A. Nr. 100 zu der Berliner Charte XXIIᵘ. den Faden IV. in Fad. II. corrigirt, und nach dieser Correction stimmt Bessels Beobachtung vollkommen mit einer Bonner Meridianbeobachtung.
23. Auch dieser Stern ist durch meine Schuld in Abthl. XIV. um ein Fadenintervall corrigirt. Die Durchmusterung und eine Bonner Meridianbeobachtung zeigten, dass die Correction nur 10″ ist.
24. Das Original hat 54′ 54″.4 an Fad. I., was für den Durchgang die Zahl des Drucks richtig giebt. Ein solcher Stern findet sich aber nicht, und hätte er zur Zeit der Beobachtung existirt, so wäre es auffallend, dass Bessel 1′ 14″ gewartet hätte, um den Stern zu beobachten, und nicht vorher den 40″ auf dem Parallel vorhergehenden LL. Nr. 7536 beobachtet hätte. Durch eine Aenderung der Decl. oder des Fadenintervalls kommt man auch auf keinen Stern, und ich glaube daher, dass die Secunde 54″.4 verschrieben ist statt 14″.4, was wegen der Minute 54 auch etwas plausibler wird, wodurch dann die Beobachtung mit dem citirten Lalandischen Sterne vollkommen übereinkommt. Ich habe daher keinen Anstand genommen, die Aenderung von 40″ vorzunehmen, obgleich die Berliner Charte Hora III. beide Sterne besonders giebt.
25. Beobachtet an Fad. III. um 8′ 56″.2 an IV. um 21″.3; die beiden Fäden weichen um 10″ von einander ab; Bessel hat Fad. III. als recht angenommen, während IV. das richtige giebt.
26. Die AR. dieses Sterns ist nach der Durchmusterung und einer Meridianbeobachtung 1856 März 7. um 4″ zu gross; aber der Druck ist richtig, da die Beobachtung an Fad. V. laut Original um 48″.7 geschah.
27. Die ARnen dieser beiden und der dazwischen liegenden Sterne sind alle um 1″ bis 2″ zu gross; es scheint dies ein durchgehender Fehler zu sein, mit dem vielleicht auch noch der folgende Stern 6ᵘ 2′ 2″.69 behaftet ist, da auch für ihn eine Meridianbeobachtung die AR. noch 0″.5 kleiner giebt. Der Druck ist überall mit dem Originale conform.
28. Der Stern ist um 12′ 6″.3 an Fad. IV. beobachtet, woraus die verbesserte Durchgangszeit resultirt. Die Durchgangszeit des Drucks ist dadurch entstanden, dass das Intervall des Fad. V. statt des Fad. IV. zur Reduction gebraucht worden ist.
29. Das Original hat Fad. III. 56″.5 mit der Bemerkung "? Es ist aber die Correction nach der falschen Seite gemacht worden.
30. Bei dem folgenden Sterne hat das Original auch die Minute 43 mit der Bemerkung 1′?, und es ist dafür 44 genommen worden; der Fehler hat also schon bei den 3 vorhergehenden Sternen stattgefunden.

31. In Abthl. XIV. ist die Durchgangszeit um +10″ corrigirt, und Steinheil als Autorität angegeben. Es ist dies aber ein Versehn: sie ist richtig, und in den Anmerkungen zum Verzeichniss der Hora XII. der Berliner Himmelscharten giebt nicht nur Steinheil die richtige Durchgangszeit, sondern Bessel selbst fügt hinzu, dass die Bemerkung AR. +10″? weg zu streichen sei.
32. Das Original hat 39″.3 an Fad. IV., was für den Durchgang die Zeit des Drucks 24″.63 giebt; dieselbe ist aber bestimmt etwa 6″ zu gross, indem eine Bonner Meridianbeobachtung 1855 Juni 6. sie 6″.21 und eine 2te 1861 Juni 4. 6″.04 kleiner geben; ich vermuthe daher, dass 39.3 ein Schreibfehler statt 33.3 ist.
33. In der uncorrigirten Position haben wir den Stern mehrmals vergebens gesucht, und auch Bremiker hat ihn schon vermisst. Auch wäre es auffallend, dass Bessel den Stern 8.9, auf den die Beobachtung nach der Correction vollkommen passt, und der auch Z. 85 13^{u} 25′ 56″.50 vorkommt, nicht sollte beobachtet haben. Ich habe daher um so weniger angestanden, diesen doppelten Fehler anzunehmen, als die Z. 161 die erste war, bei der Rosenberger das Microscop ablas. Dass Bessel selbst eine solche Cumulation von Fehlern plausibel fand, zeigt die in Abthl. XIV. von ihm adoptirte Correction bei dem Sterne Z. 172 16^{u} 44″ 45″.45, deren Richtigkeit eine Bonner Meridianbeobachtung bestätigt.
34. Der Stern, der dieser Beobachtung am nächsten entspricht, weicht nach den Durchmusterungszonen und einer Bonner Meridianbeobachtung 1861 Juni 8. um +6″.6 und −1′.1 von ihr ab. Es würde dies durch eine eigne Bewegung von etwa 3″ im Bogen des grössten Kreises jährlich erklärt werden können; aber einmal wäre eine so starke Bewegung bei einem Sterne, der zu den schwächern der 9^{m}. gehört, schon sehr auffallend, und besonders auch die starke negative Bewegung in AR., da vermöge der Sonnenbewegung in dieser Gegend eine kleine positive Bewegung entstehn müsste. Dann wäre es auch auffallend, dass Bessel den Stern LL. 30375, der zu den hellern der 9^{m}. gehört, nur 3″ folgte und 9′ südlicher ist, nicht sollte beobachtet haben. Liest man dagegen die Scalentheile 72 statt 42, wodurch der Durchgang durch den mittlern Faden in 16^{u} 32′ 57″.38 die Decl. in +11° 6′ 39″.3 verwandelt werden, so kommt die Beobachtung mit dem Sterne Z. 94 8.9^{m}. 16^{u} 32′ 43″.87 überein, und ich halte daher diese Aenderung für sehr wahrscheinlich. In einigen Jahren wird sich hierüber Entscheidung herbeiführen lassen.
35. Das Original ist undeutlich, aber eher 56.7 als 26.7 zu lesen.
36. Die aus den Beobachtungen dieser Zone des 2ten, 3ten und 5ten Sterns, die auch in Z. 99 in einer um 1″ kleinern AR. vorkommen, folgenden Rectascensionen hat Weisse ausgeschlossen, wahrscheinlich auf den Rath Bessels, da das Original bei dem letzten dieser Sterne die freilich später ausgestrichene Bemerkung „Sec ?“ hat. Da nun aber alle 5 Sterne die AR. gegen Bonner Meridianbeobachtungen um 1″ zu gross geben, so halte ich es für gerechtfertigt, bei allen den gleichen Fehler anzunehmen und zu verbessern.
37. Die Scalentheile waren ursprünglich im Originale 71 angegeben, woraus später fälschlich 75 gemacht ist.
38. Ist sehr wahrscheinlich eine Wiederholung des unmittelbar vorhergehenden, um 2″ zu spät beobachtet. Wenigstens haben wir einen solchen Stern mehrmals vergebens gesucht, und wäre er zur Zeit der Zone vorhanden gewesen, so hätte Bessel gewiss nicht bis zum 4ten Faden gewartet, um ihn zu beobachten, sondern ihn am 3ten genommen. Auch fehlt der Stern in der nur 4 Wochen später beobachteten Z. 181. Ebenso hat Capocci auf der Charte nur einen Stern; Inghirami scheint eine Correctur gemacht zu haben, indem er einen vorhergehenden Stern als beobachtet bezeichnet hat. Im Verzeichniss kommen 3 Sterne vor, indem der Verfertiger nicht nur den fraglichen Stern, sondern den vorhergehenden doppelt aufgenommen hat, einmal aus Z. 181 als 7^{m}., dann aus unsrer Zone als 9^{m}. ohne die Anmerkung am Schlusse der Zone „Trübe“ zu beachten. Bessel hat nach der Beobachtung des vorhergehenden Sterns das Fernrohr weiter nach Norden bewegt, ist bald an die Gränze gelangt, und nun bei der Umkehr, wie so häufig, wieder auf denselben Stern gekommen. In solchen Fällen pflegte Bessel, wenn er glaubte, dass der Stern schon da gewesen, den Beobachter am Microscop zu fragen, und dadurch könnte die Verzählung entstanden sein.
39. Nur durch Annahme dieses doppelten Fehlers ist die Beobachtung mit einem Sterne in Uebereinstimmung zu bringen, der 1856 Sept. 15. und 1860 Juli 16. am Bonner Meridiankreise übereinstimmend beobachtet wurde, so dass an eigne Bewegung nicht zu denken ist.
40. Das Original hat ursprünglich 39′ 59″.4 für Fad. II. gehabt, und die 5 ist nachher durchstrichen; 59″.4 ist aber richtig und die Minute 38′ zu lesen. So stimmt die Beobachtung mit der Durchmusterung und einer Bonner Meridianbeobachtung. Hiernach ist die Bemerkung in Abthl. XIV. zu berichtigen.
41. Der Druck ist übereinstimmend mit dem Original, aber die Declination des Sterns, 72 Ophiuchi, offenbar 10″ bis 12″ zu klein; vielleicht ist 1666 ein Schreibfehler für 1696.
42. Abthl. XIV. ist der Scalentheil durch einen Druckfehler 46 statt 65 angegeben.
43. Zeitminute im Druck wie im Original, aber bei den 3 folgenden Sternen ist sie um 1 vergrössert worden, und bei dem

vorhergehenden Sterne steht die Bemerkung „hier ist die Minute noch recht“. Der Fehler hat also bei unserm Stern angefangen.

44. Der Druck ist in Uebereinstimmung mit dem Originale; aber in der uncorrigirten Position fehlt der Stern in 3 unsrer Zonen, und war ebenso wenig im November 1858 vorhanden. Die Beobachtung ist aber auch schon an sich ganz unwahrscheinlich: Bessel war vor der Beobachtung nach Süden gegangen, und ging nach dem folgenden Sterne wieder nach Norden. Wäre also die Beobachtung unsers Sterns richtig, so wäre er in der kurzen Zeit von 1′ 8″ an die südliche Gränze, von da beinahe an die nördliche gegangen, hätte unsern Stern beobachtet, und wäre dann wieder beinahe an die südliche Gränze gekommen, um den folgenden Stern zu beobachten. Ich glaube, dass solch ein Fall in dem ganzen Verlaufe der Zonenbeobachtungen sich nicht finden wird. Hierzu kommt noch, dass, wäre Bessel wirklich nach Norden gegangen, er auf den Lalandischen Stern 8.9^{m}. hätte kommen müssen, dessen Position in der Zone etwa 20^{u} 32′ 59″ +22° 19′ war und bei der Rückkehr auf den Stern 9^{m}. in 20^{u} 33′ 32″ +22° 5′. Am auffallendsten wäre es dann aber, dass er den der uncorrigirten Position 16″ folgenden und 1′ nördlichern Stern 9^{m}. nicht beobachtet hätte, der in unserm Verzeichniss in Z. +23° unter Nr. 4098 nach einer Bonner Meridianbeobachtung angesetzt ist. Ich bin aus diesen Gründen überzeugt, dass der Stern so wie er angegeben ist, nicht existirt hat, und habe daher die allerdings auch unwahrscheinliche Correctur von 35 Scalentheilen vorgenommen. Aber diese Correctur hebt alle hervorgehobenen Unwahrscheinlichkeiten auf und bringt die Beobachtung in vollständige Uebereinstimmung mit dem Sterne in Z. 302. 8^{m}. 20^{u} 32′ 13″.78 = LL. 39958.

45. In Abthl. XIV. ist die Bemerkung des Drucks dupl. 8″ durch ein ? zweifelhaft gemacht; sie findet sich aber nicht im Original, sondern hier steht +8″? und diese Correction ist richtig, und gilt auch für den vorhergehenden Stern.

46. Nach dem Original Fad. I. 20′ 49″.4 Fad. III. 21′ 17″.5; Fad. I. giebt auf den Mittelfaden reducirt 18″63; Bessel hat das Mittel genommen und die AR. als zweifelhaft angesetzt; es ist aber nach einer Bonner Meridianbeobachtung der erste Faden um 1″ verzählt und muss 48″.4 heissen, so dass das Mittel wird 17″.57.

47. Die Angabe des Scalentheiles fehlt im Original. Dies bedeutet in der Regel, dass der Scalentheil derselbe gewesen, wie bei der vorherigen Beobachtung. Hier hat nun beim vorhergehenden Sterne ursprünglich eine andre Zahl als 64 gestanden, denn die 4 ist mit Tinte geschrieben.

48. In der dieser Beobachtung entsprechenden Position ist bei mehrmaligem Suchen kein Stern am Himmel gefunden worden, und eben so wenig eine plausible Conjectur, um sie einem vorhandenen anzupassen. Herr Powalky hat gezeigt, dass es eine Beobachtung der Amphitrite gewesen ist.

49. Die in der Einleitung zu Abthl. XI. pag. IX. angegebenen Fadenintervalle für die Zeit von März 27. bis April 25. gelten in ihrer Ordnung nicht, wie die andern für Kreis Ost, sondern für Kreis West, und sind demgemäss auch die Zonen Nr. 282 bis 287 reducirt.

56. Das Original hat allerdings die Minute 26, aber gewiss durch einen Schreibfehler. Ein Fehler des Originals von —1″ bei diesem, dem vorhergehenden und folgenden Sterne ist im Druck schon verbessert.

51. Bei dieser Minute finde ich in den Gränzen der Zone keinen Stern; wahrscheinlich ist die Minute 37 gewesen, wo dann die AR. vollkommen zu dem Stern Z. 286. 15^{u} 37′ 3″.65 +17° 18′ 6″.0 = Pl. XV^{u}. 165 passen würde; die Durchgangszeit wäre dann zu lesen 15^{u} 37′ 2″.28.

52. Ich kann keinen andern Stern finden, der dieser AR. entspräche, sie ist aber 1″.5 zu gross gegen Z. 291 und eine Meridianbeob. 1861 Juni 18.

53. Diese beiden Sterne kommen am Himmel nicht vor; es sind wahrscheinlich um resp. —27″ und —33″ in AR. fehlerhafte Beobachtungen zweier Sterne, von denen der erste noch zweimal bei Bessel vorkommt, der zweite durch eine Bonner Meridianbeobachtung bestimmt ist, und deren Positionen in der Zone sein mussten 10^{u} 55′ 2″.4 +17° 12′.3 und 10^{u} 55′ 6″.6 +16° 48′.2. Das Original giebt für den ersten an Fad. I. 54′ 4″.7, für den zweiten an Fad. V. 55′ 3″.7. Vielleicht bemerkte Rosenberger bei dem ersten einen Fehler von +3″ ohne den der halben Minute gewahr zu werden, und verbesserte ihn bei der zweiten Beobachtung nach der verkehrten Seite, eine Verwechslung, die wohl Jeder, der solche rasch auf einander folgende Beobachtungen angestellt hat, mehrfach wird begangen haben; bei Bessel und mir ist sie gar nicht selten vorgekommen.

54. Dieser Stern lässt sich auf keinerlei irgend plausible Weise mit dem Himmel in Uebereinstimmung bringen; die Zahlen des Originals stimmen mit dem Drucke überein, und der Zweifel wegen der Zeitminute ist daraus entstanden, dass diese bei den 4 vorhergehenden Sternen, wahrscheinlich nach Vergleichung mit andern Beobachtungen um eine vermindert worden ist. Wenn nicht sehr complicirte Fehler vorgefallen sind, so ist es wahrscheinlich ein Planet gewesen, obgleich ich die Variabilität trotz sehr häufiger fruchtloser Versuche, ihn zu sehn, nicht ganz ausschliessen möchte.

55. Bei diesem und den 3 folgenden Sternen herrscht im Original grosse Verwirrung in den Minuten.
56. Im Original steht die Bemerkung "? beim folgenden Sterne; die Secunde ist aber wahrscheinlich auch bei diesem, 31 Serpentis, richtig.
57. Bei dem dem letzten dieser 5 Sterne folgenden Sterne hat Anfangs die Minute 56 gestanden, die nachher in 57 geändert ist; die gleiche Aenderung ist wohl bei den 5 Sternen nur vergessen worden.
58. Beim folgenden Sterne ist die Minute um +1 corrigirt worden; der Fehler hat also schon bei diesem statt gefunden.
59. Schraubentheile im Original undeutlich und 1200 oder 1800 zu lesen; selbst wenn der Himmel nicht für 1200 entschiede, wäre 1200 fast sicher zu nehmen, da bei dem vorhergehenden nur 27" früher beobachteten Sterne 1014 abgelesen war, 800 Schraubentheile aber etwa 1½ Scalentheilen entsprechen, und der Beobachter mit der Schraube doch gewiss nicht über einen Scalentheil fortgegangen wäre.
60. Das Original hat Fad. II. 23′ 8″.3 Fad. IV. 40″.2 mit der Bemerkung —1″? Diese Secunde ist nun von dem Mittel, das uncorrigirt 23′ 24″.44 giebt, abgezogen, aber mit Unrecht, da die ungeänderte Durchgangszeit fast genau mit einer Bonner Meridianbeobachtung stimmt, und noch eine um 0″.5 kleinere AR. giebt, als die Beobachtung desselben Sterns in Z. 369. 16ᵘ 23′ 42″.91. Bei dem vorhergehenden Sterne steht die Bemerkung —1″ ohne ?, und hier ist die Correction richtig angebracht, wie LL. und 2 Beobachtungen von Rümker zeigen. Die Minute ist bei allen 3 Sternen im Original wie im Druck, muss aber um 1 vermehrt werden.
61. Beobachtet nach dem Original an Fad. IV. um 56′ 8″.3, also der Druck recht, aber die Beobachtung giebt die AR. über 1″ zu klein.
62. Das Original hat bei diesem und den 11 vorhergehenden Sternen dieselbe Minute wie der Druck, aber bei den 10 folgenden hat ursprünglich auch die frühere Minute gestanden, und es ist nur ein Versehen, dass dieselbe nicht wenigstens bei unserm Sterne corrigirt ist, da derselbe ausdrücklich als „derselbe" mit einem der corrigirten bezeichnet ist.
63. Das Original hat 25″.2 an Fad. IV., in Abthl. XIV. ist aber Fad. IV. in Fad. V. und demgemäss die Durchgangszeit in 18ᵘ 2′ 55″.09 corrigirt; dies ist unrichtig: der Stern findet sich in der ungeänderten Position am Himmel; vielleicht ist eine Verwechselung mit dem zweitfolgenden Sterne vorgefallen, wo allerdings der 4te Faden in den 5ten zu verwandeln ist.
64. Druck übereinstimmend mit dem Original, aber bei dem folgenden Sterne ist die ursprüngliche Minute um 1 vermehrt worden.
65. Der Fehler von 10″ Zeit, der bei dem folgenden Sterne entdeckt ward, hat offenbar schon bei diesen beiden statt gefunden.
66. Beobachtet an Fad. I. um 28′ 56″.2, woraus die verbesserte Durchgangszeit folgt; die Reduction für den Druck ist mit 20° 20′ statt 22° 20′ gemacht, und nun noch ein Schreib- oder Druckfehler von 10″. Die Scalentheile sind im Original wie im Druck, müssen aber nach einer Bonner Meridianbeobachtung um 1 vermehrt werden.
67. Im Original deutlich 16′ 8″.4 an Fad. IV., was die Durchgangszeit des Drucks giebt, aber wohl verschrieben statt 1″.4, wie es Rümker und eine Bonner Meridianbeobachtung fordern.
68. Im Original 19ᵘ 56′ 7″.2 an Fad. IV., also der Druck in Uebereinstimmung mit dem Orig. aber wahrscheinlich Schreibfehler statt 4″.2.
69. Das Original hat übereinstimmend mit dem Druck 27 1765, aber 3 Bonner Meridianbeobachtungen aus den Jahren 1857 und 1860 fordern übereinstimmend die Correctur. Auch wäre es sehr seltsam, da die Schraube beim vorhergehenden Sterne auf 1305 stand, wenn der Beobachter 4.6 Umgänge bis zum vorhergehenden Striche gegangen wäre, während er in einem halben den folgenden erreichen konnte. Es ist gewiss ein Schreibfehler.
70. Im Original fehlt die Bemerkung Sec.?; sie wurde offenbar bei der Berechnung gemacht, weil der vorhergehende Stern auch bei 31′ 21″.2 an Fad. II. beobachtet ist; ich vermuthe, dass 21″.2 einfach eine Verschreibung statt 41″.2 ist.
71. Im Original ist die Zahl an Fad. IV. undeutlich geschrieben; sie ist 30.8 gelesen worden, kann aber auch 39.8 und 38.8 gelesen werden. Das Letzte ist nach einer Bonner Meridianbeobachtung das Richtige.
72. Der Druck ist übereinstimmend mit dem Original; aber die Durchgänge der 19 folgenden Sterne sind um —10″ corrigirt; der Verzählungsfehler hat also auch schon bei diesem Sterne statt gefunden.
73. Der Druck ist bei diesen 15 Sternen in Uebereinstimmung mit dem Original; bei den 4 folgenden Sternen hat aber Anfangs eine Minute mehr gestanden, was nachher corrigirt ist; derselbe Fehler hat schon bei unsern 15 Sternen statt gefunden.
74. Original Fad. V. 32′ 34″.1 oder 34″.4; mit dem letztern ist gerechnet; wäre das erstere richtig, so würde der Durchgang 19ᵘ 32′ 13″.60, aber Bessels Lesart stimmt besser mit der Beobachtung desselben Sterns in Z. 485.; der Fad. ist gewiss IV.
75. Das Original hat an Fad. IV. 49″.7 oder 59″.7; es lässt sich nicht mehr erkennen, welches das Ursprüngliche war, mit 39″.7 ist gerechnet, aber 49″.7 ist das Richtige.

76. Druck wie Original, aber bei dem vorhergehenden Doppelstern steht im Original auch die Minute 44, die im Druck in 43 verwandelt ist.
77. Ich habe angenommen, dass der Zweifel nach der entgegengesetzten Seite statt gefunden hat. So stimmt die Beobachtung mit Z. 524 6^u 14′ 32″.47 und einer Bonner Meridianbeobachtung.
78. Das Original hat Fad. IV. 39′ 44″.6 und es ist also 9″.25 ein Fehler des Drucks statt 29″.25; es muss aber Fad. V. sein, woraus die Verbesserung entsteht.
79. Im Druck wie im Original, aber beim folgenden Sterne hat Anfangs die Minute 26 gestanden, die dann in 27 geändert ist.
80. Die Decl. ist gegen LL. und eine Bonner Meridianbeobachtung 10″ zu gross. Man würde Uebereinstimmung hervorbringen, wenn man die Schraube 1714 statt 1686 läse, wodurch die Decl. +27° 54′ 34″.4 würde; da aber die Schraube immer nach derselben Seite abgelesen ward, so wäre dies ein ganz eigenthümliches Versehn.
81. Im Original steht die Minute 30, und zwar ist die 0 mit Tinte geschrieben; dabei mit Tinte die Anmerkung +1′ Nr. 278. In Z. 278 ist aber der Stern auch um 1′ zu spät angesetzt. Die ursprüngliche Lesart ist die richtige; vielleicht war ursprünglich nur 3 geschrieben.
82. Original Fad. II. 24′ 23″.6; bei dem folgenden Sterne ist die Minute aus 25 in 26 corrigirt, und bei unserm Sterne also offenbar die Correction aus Versehn nach der verkehrten Seite gemacht.
83. Das Original hat 17′ 3″.3 an Fad. II., woraus für den Durchgang die Zahl des Drucks folgt, die Zeiten der beiden folgenden Sterne sind aber um 30″ zu klein; nimmt man denselben Fehler auch bei diesem Sterne an, und liest ausserdem Fad. III. statt Fad. II., so erhält man Uebereinstimmung mit Lalande und dem Himmel, die durch keine einfachere Correctur zu erreichen ist.
84. Das Original hat ursprünglich an Fad. IV. 11′ 6″.3 gehabt, was für den Durchgang 10′ 49″.24 gäbe; die 6 ist aber nachher in 7 verändert; Bessel hat also einen Fehler von 1″ entdeckt, und diesen nach der verkehrten Seite genommen; es hätte die Aenderung in 5″.3 gemacht werden müssen nach LL. und einer Bonner Meridianbeobachtung.
85. Das Original hat an Fad. III. 5′ 11″.3 an IV. 38″.5, welcher letztere für den Durchgang 21″.72 giebt; Bessel hat III. für richtig gehalten, und danach IV. um —10″ corrigirt, während IV. richtig ist und III. um +10″ zu corrigiren.
86. Auch nach dieser Corr. von —30″ ist die AR. über 2″ zu gross gegen die Bonner Meridianbeobachtungen und gegen Z. 475.
87. Im Original Fad. III. 16^u 26′ 24″ mit der spätern Bemerkung —2″ vide 477. Die Bemerkung ist nach einer Bonner Meridianbeobachtung richtig.
88. Dieser und die 3 vorhergehenden Sterne nach dem Original recht reducirt, aber bei dem folgenden Sterne ist die Minute um +1 corrigirt; dieselbe Correction hätte auch schon an diesen und die 3 frühern Sterne angebracht werden sollen.
89. Nur durch Annahme dieses doppelten Fehlers mit dem Himmel in Uebereinstimmung zu bringen, dann aber auch in vollkommene mit einer Bonner Meridianbeobachtung, sowie mit Z. 371 15^u 42′ 46″.33 und LL.
90. Nach dem Original Zeitsecunde zweifelhaft; wahrscheinlich —1″, da eine Bonner Meridianbeobachtung die AR. 0″.65 kleiner giebt.
91. Die Bemerkung fehlt im Original; sie ist wohl nach Vergleichung von Z. 425 16^u 33′ 19″.90, Z. 372 16^u 32′ 26″.59 und Z. 475 16^u 32′ 41″.66 hinzugefügt und ist recht.
92. Das Original hat 49′ 29″.2 an Fad. I. was richtig die Durchgangszeit des Drucks giebt; es ist dies aber wohl ein Schreibfehler statt 21″.2. Nur unter dieser Annahme kommt die Beobachtung in Uebereinstimmung mit LL. 30907 und einer Bonner Meridianbeobachtung.
93. Im Druck ist Fad. IV. ein Druckfehler, das Original hat Fad. III. 4′ 32″.4; es ist aber wirklich der Faden falsch, und muss IV. sein, so dass die Durchgangszeit 4′ 14″.85 wird.
94. Das Original hat die Bemerkung +1f?, die also richtig ist; ausserdem ist die Zeit dieses Sterns um +1′ corrigirt worden, und derselbe Fehler hat also schon bei den beiden vorhergehenden Sternen statt gefunden.
95. Der Stern ist nach dem Original um 15′ 26″.5 an Fad. IV. beobachtet, woraus richtig die Durchgangszeit des Drucks folgt, aber die AR. ist nach Struve in den positiones mediae und meinen Beobachtungen um etwa 2″ zu klein.
96. Das Original hat Fad. III. 24′ 3″.5 mit der Bemerkung —1′. Diese Bemerk. ist bei der Berechnung wahrscheinlich desshalb nicht berücksichtigt worden, weil der vorhergehende 15′ nördlichere Stern an Fad. II. um 23′ 3″.0 beobachtet war, und der unsrige desshalb nicht um 23′ 3″.5 beobachtet sein konnte, aber auch um 24′ 3″.5 kann er nicht gut beobachtet sein, weil 9″ später schon wieder ein 50′ nördlicherer Stern beobachtet wurde, und somit ist das Versehn um ½ Minute statt 1′ mehr als wahrscheinlich.
97. Fad. II. des Drucks ist ein Fehler statt Fad. IV.; das Original hat an Fad. IV. 34′ 34″.7, woraus für den Durchgang 34′ 17″.22 folgt, wie der Druck hat; es muss aber ein Fehler von 8″ vorgefallen sein. Liest man den Durchgang

34′ 25″.22 so kommt die Beobachtung mit dem Sterne Z. 377 22^{u} 34′ 30″.22 und einer Bonner Meridianbeobachtung überein; dass beide Sterne neben einander bestehn sollten, und beide veränderlich seien, ist wohl nicht anzunehmen, und so habe ich die Correctur von 8″ gewagt.

98. Der Druck ist mit dem Originale in Uebereinstimmung, man muss aber die Durchgangszeit um 25″ vermindern, um Uebereinstimmung mit dem Himmel zu erhalten, und sie also 23^{u} 23′ 20″.86 lesen. Dass der Stern veränderlich sein sollte, ist mir unwahrscheinlich.

99. Das Original hat Fad. II. 37′ 21″.4 Fad. IV. 50″. Bei der ursprünglichen Berechnung, wonach der Druck gemacht ist, ist nun nur Fad. IV. berücksichtigt; später aber ist im Original mit Tinte die Bemerkung beigeschrieben „2 f. recht v. No. 445^{a} und daraus ist die in Abthl. XIV. gegebene Correctur entstanden, die auch dem Himmel entspricht. Sollte 50 etwa Schreibfehler statt 53″.5 sein?

100. Das Original hat Fad. II. 29′ 43″ und das Microscop 57. 1016; die Secunde 43 könnte auch 4.3 gelesen werden, aber 43 ist das Rechte, und damit ist auch gerechnet; die Minute 29′ ist später ausgestrichen, und dadurch die falsche Minute des Drucks geworden. Das Fadenintervall ist mit der richtigen Declination berechnet.

101. Nur unter dieser Annahme lässt sich die Beobachtung mit einem existirenden Sterne in Uebereinstimmung bringen.

102. Aber dann ist die AR. 0″.5 grösser als die aus einer Bonner Beobachtung und einer von Rümker folgenden.

103. Die Zahl des Originals ist undeutlich; es kann Fad. IV. 13′ 12″.4 und 13′ 2″.4 gelesen werden; das letztere ist das Richtige.

104. Schon aus der 4maligen Aufeinanderfolge desselben Fehlers wird es wahrscheinlich, das es ein Reductions- und nicht ein Druckfehler sei, und durch die Hundertelsecunden des Drucks wird dies zur Gewissheit; ich habe daher auch die Durchgänge der Correction der Decl. gemäss corrigirt.

105. Original Fad. III. 49″.30 mit der spätern Bemerkung „—10″ vide 535^{a}. Die Bemerkung dupl. 7″ die in Abthl. XIV. hinzugefügt ist, findet sich nicht im Original, sondern ist wohl nach der bekannten Distanz dieses Doppelsterns Str. 427 = H. N. No. 23 angegeben; in Z. 535 ist der Stern als dupl. 5″ bezeichnet.

106. Das Original hat Fad. V. 54′ 46″.3 mit der Bemerkung +1′, die gewiss auch für die 3 vorhergehenden Sterne gilt, aber bei der Reduction übersehn worden ist.

107. Das Original hat übereinstimmend mit dem Druck Fad. III. 59′ 5″.9; es ist dies aber gewiss ein Schreibfehler für 59′ 8″.9, was LL., Rümker und Struve in den positiones mediae mit grosser Uebereinstimmung fordern; es ist Str. dupl. 1187 und die bei dem vorhergehenden Sterne stehende Bemerkung „dupl. ?“ gehört wohl zu diesem Sterne, obgleich sie auch im Originale bei dem vorigen steht.

108. Diese beiden Beobachtungen, die richtig nach dem Original angesetzt sind, gehören trotz ihrer geringen Uebereinstimmung einem und demselben Sterne an, der zu 3 verschiedenen Zeiten im Bonner Meridiankreise nur einfach gesehn worden ist; das Mittel der beiden Declinationen stimmt sehr nahe mit den Bonner Beobachtungen, und ebenso das Mittel der beiden Rectascensionen, wenn man annimmt, dass bei der zweiten Beobachtung ein Fehler von +1″ begangen ist, und sie also 33′ 52″.70 liest.

109. Bessel hat diesen Fehler schon erkannt, indem er dem Original später hinzugeschrieben hat: „Fad. III. vide 525 und HC. p. 212^{a}; 525 ist aber ein Schreibfehler, es muss 518 heissen, wo der Stern mit der Durchgangszeit 6^{u} 58′ 45″.30 vorkommt.

110. Siehe die folgende Note.

111. Im Original um —9″ corrigirt; ich habe daher auch den vorhergehenden Stern um —9″ corrigirt, obgleich eine Corr. von —10″ besser mit unsern Beobachtungen stimmen würde. Die Minute ist bei beiden Sternen auch im Original um 1′ zu klein.

112. Im Original steht 10′ 6″.4 sowohl in der Columne für Fad. III. als auch für Fad. IV.; beides ist dann ausgestrichen und am Rande bemerkt 3.f.; es war aber der 4te Faden der richtige.

113. Das Original hat deutlich 7′ 2″.0 an Fad. III.; aber die Beobachtung desselben Sterns in Z. 523, LL., Rümker und eine Bonner Meridianbeobachtung fordern übereinstimmend 7′ 0″.0; es ist also wohl die Verbesserung von 1″ nach der verkehrten Seite gemacht.

114. Der Druck ist bei allen 3 Sternen conform dem Original, aber bei dem letzten Sterne hat dieses die Bemerkung „Faden ?“

115. Der Druck ist in Uebereinstimmung mit dem Original, aber bei dem folgenden Sterne ist in letzterm die ursprüngliche Durchgangszeit um +10″ corrigirt; derselbe Fehler hat schon bei unsern Sternen statt gefunden.

116. Das Original hatte ursprünglich Fad. IV., was nachher fälschlich in Fad. III. verwandelt ist.

117. Der Druck ist in Uebereinstimmung mit dem Original, aber ein solcher Stern findet sich nicht am Himmel. Es ist kaum zweifelhaft, dass Bessel den Stern 8^{m}. LL. 36494 beobachtet habe, dessen AR. genau stimmt, während die Decl. 2′.1 kleiner ist. LL.'s Position stimmt mit einer Bonner Meridianbeobachtung, aber Bessels Decl. kann man mit diesem

Sterne nur in Uebereinstimmung bringen, wenn man die Schraubentheile 1177 statt 807 liest, wodurch die Decl. in der Zone statt 18° 37′ 26″.1 wird 18° 35′ 19″.9 und man für 1825 erhält

aus LL.	19ᵘ 13′	13″.43	+18° 33′ 56″.9
Bessel		13″.64	57″.1
1858 Aug. 5.		13″.50	57″.9.

Im Bereiche der Zone findet sich kein einigermassen heller Stern, mit dem wir durch Annahme irgend eines andern Fehlers die Beobachtung in Uebereinstimmung bringen können, und es wäre auch höchst auffallend, wenn Bessel den Lalandischen Stern, der mit dem vorhergehenden zusammen im Felde war, nicht beobachtet hätte.

118. Original Fad. II. 4′ 53″.5 was die verbesserte Durchgangszeit giebt. Der Fehler ist dadurch entstanden, dass die Reduction mit einer um 10° grössern Declination gemacht ist.

119. Druck conform dem Original, aber die AR. ist 2″ bis 3″ zu klein gegen die Beobachtung in Z. 435 und 3 Bonner Meridianbeobachtungen.

120. Die Bemerkung findet sich im Original nur bei dem folgenden Sterne, bei diesem nicht. Eine Bonner Meridianbeob. giebt aber die AR. 0″.6 kleiner.

121. Das Original hat ursprünglich 29′ 23″.2 an Fad. III. gehabt, was später irrthümlich in 13″.2 geändert ist.

122. Der Zweifel bleibt nach 2 andern Beobachtungen von Bessel und einer von Rümker unentschieden.

123. Im Original ist die Zahl der Scalentheile undeutlich, so dass sie 60 und 61 gelesen werden kann; daher der Zweifel.

124. In der Decl. dieses Sterns muss irgend ein Fehler liegen, sie ist 1′.6 zu gross, und man müsste die Schraubentheile etwa 1035 statt 753 lesen, um sie mit dem Himmel in Uebereinstimmung zu bringen; aber im Original ist kein Fehler zu entdecken.

125. Im Original Fad. II. 9′ 44″.7 aber später ist bei diesem und den 6 folgenden Sternen 1′ mehr genommen, bei diesem fälschlich, bei den andern mit Recht.

126. Die Durchgangszeit des Drucks ist richtig nach dem Original reducirt, das an Fad. II. 17′ 6″.4 hat, aber beim folgenden Stern ist ein Fehler von 20″ aufgefunden und corrigirt, der also auch bei unserm Stern schon statt gefunden hat.

127. Z. 285 giebt die AR. dieses Sterns 0″.5, eine Bonner Meridianbeobachtung 0″.7 grösser; es ist also wahrscheinlich, dass die in der Bemerkung vermuthete Correction von +1″ begründet ist.

128. Druck übereinstimmend mit dem Original, aber bei dem folgenden Sterne ist die beobachtete Minute um 1 vermindert worden; es hätte auch schon bei diesem geschehn müssen.

129. Im Original, das auch Fad. IV. hat, findet sich die spätere Bemerkung, dass Gauss bemerkt habe, dies müsse Fad. III. sein.

130. Druck conform dem Original, aber beim folgenden Sterne ist die Durchgangszeit um +10″ corrigirt worden; derselbe Fehler hat auch schon hier statt gefunden.

131. Minute wie im Original bei diesem und den beiden vorhergehenden Sternen, aber beim folgenden ist sie um +1 corrigirt worden; also hier schon derselbe Fehler.

132. Das Original hat Fad. V. 35′ 21″, was die Durchgangszeit des Drucks giebt, aber nach Z. 463 und einer Bonner Meridianbeobachtung muss die Zeit 2″ kleiner sein; wohl eine Verbesserung im unrechten Sinne.

133. Der Stern ist nach dem Original an Fad. V. um 36′ 59″.2 beobachtet, woraus richtig die Durchgangszeit des Drucks folgt; aber die Durchmusterung und 3 Meridianbeobachtungen geben die AR. 12″.3 kleiner, und die letztern lassen sich nicht gut mit einer EB. von —0″.4 jährlich vereinigen, die man annehmen müsste, wenn die Besselsche Position richtig wäre, ganz abgesehn davon, dass eine so starke EB. bei einem Sterne 9ᵐ. höchst auffallend wäre, zumal die Decl. vollkommen übereinstimmt. Ich vermuthe daher irgend einen complicirten Beobachtungsfehler, kann aber nicht ergründen welchen.

134. Original Fad. II. ursprünglich 48′ 47″.3 nachher fälschlich in 48′ 57″.3 geändert.

135. Original Fad. IV. ursprünglich 34″.0, nachher fälschlich in 44″.0 geändert.

136. Die Durchgangszeit ist richtig aus dem Original reducirt, das 0′ 59″.3 an Fad. I. hat; ich vermuthe aber, dass 59″.3 ein Schreibfehler statt 52″.3 ist, wodurch die Durchgangszeit 1′ 26″.13 wird. Nur so stimmt die Beobachtung mit den Bonner Meridianbeobachtungen.

137. In den Scalentheilen dieser Beobachtung muss ein Fehler liegen; der Druck ist mit dem Original in Uebereinstimmung, aber nach dem Zeugniss von LL. und einer Bonner Meridianbeobachtung müssten sie 1049 oder vielleicht 1059 statt 1099 sein.

138. Das Original hat allerdings auch die Schraubentheile 1052, aber dies ist eine Correctur, ohne dass sich erkennen lässt, was ursprünglich eingetragen gewesen ist; 2 Meridianbeobachtungen fordern 752.

139. Der Zweifel wegen der Zeitsecunde bleibt nach Piazzi, LL., Groombridge, Rümker, Johnson und einer Bonner Meridianbeobachtung unentschieden; der Stern scheint eine kleine EB. von gegen +0″.01 und —0″.1 zu haben.

140. Nach LL. und Struve in den pos. mediae um —3″ zu corrigiren, obgleich der Druck mit dem Original in Uebereinstimmung ist.

141. Die beiden diesen 6 Sternen folgenden sind im Originale als an Fad. II. beobachtet eingetragen, haben aber die Bemerkung +1 f. und sind desshalb als an Fad. III. beobachtet berechnet. Wahrscheinlich vermuthete schon Bessel, dass dieser Fehler sich von früher fortgepflanzt habe, und machte desshalb die Bemerkung „zweifelhaft“.

142. Ursprünglich an Fad. IV. um 14′ 20″.1 beobachtet, aber bei diesem und den 19 folgenden Sternen ist immer der folgende Faden gerechnet worden, bei unserm Sterne irrthümlich.

143. Die Bemerkung „—10″ Zeit“ steht im Originale beim folgenden Sterne, wo sie auch richtig ist; offenbar hat der Fehler aber auch schon bei unserm Sterne statt gefunden.

144. Beim folgenden Sterne ist 1′ mehr angenommen als beobachtet; der Fehler hat schon bei diesem und den beiden vorhergehenden Sternen statt gefunden.

145. Obgleich das Original die Schraubentheile auch wie der Druck 1370 giebt, so habe ich doch keinen Anstand genommen, dies für einen Schreibfehler anzusehn, da die Beobachtung in Z. 507 so wie die bekannte Position des Sterns, 49 Aurigae, diese Aenderung fordern.

146. Der Druck ist in Uebereinstimmung mit dem Original, aber ein solcher Stern kommt weder in der Durchmusterung vor, noch ist er bei mehrmaligem Suchen gefunden worden. Nimmt man hingegen den doppelten Fehler von —20 und —1 Scalentheilen an, so passt die Beobachtung vollkommen zu einem hellern Stern 9^{m}., dessen Position am Meridiankreise bestimmt ist. Auch passt die Beobachtung so corrigirt besser in die Reihe, da Bessel offenbar nach Norden ging.

147. Druck conform dem Original, aber 1332 sicher Ablesefehler statt 832, da sonst kein Grund gewesen wäre, beim folgenden Sterne auf die ungewöhnlich kleine Zahl 695 zu gehn mit Uebergehung des nächsten Striches, auf den der Beobachter bei 1220 Schraubentheilen gekommen wäre.

148. Auch hier halte ich die Correction von 5 Révolutionen der Schraube für unzweifelhaft, weil die corrigirte Zahl der frühern viel näher liegt, und besonders auch von der uncorrigirten der Strich 39 bei der folgenden Beobachtung in weniger als einer Revolution zu erreichen gewesen wäre, und der Beobachter daher schwerlich über 4 Revolutionen gemacht haben würde, um zum Striche 40 zu kommen. In ähnlichen Fällen wird später auf diese Note verwiesen werden.

149. Original Fad. IV. undeutlich, 18′ 1″.7 oder 18′ 17″. Der Rechner hat 17 gelesen, während 1.7 das Richtige ist.

150. Original Fad. IV, 9′ 23″.3, später in 10′ 23″.3 irrthümlich corrigirt.

151. Druck conform dem Original, aber nach Z. 522 und einer Bonner Beobachtung corrigirt; wohl Schreibfehler.

152. Druck wie Original aber bei den folgenden Sternen ist 1 Faden mehr genommen; es hätte auch bei diesen schon geschehn sollen.

153. Ich vermuthe, dass die Schraubentheile 1497 statt 1437 zu lesen seien, und demnach die Declination 33° 56′ 4″.2; unter dieser Annahme wird Uebereinstimmung mit zwei Bonner Meridianbeobachtungen 1858 und 1861 erzielt, welche letztere keine EB. verrathen.

154. Die Declinationen sind in dieser Zone mit einem falschen Schraubenwerthe, nämlich R= 34″.205, berechnet, während die Nullpuncte mit dem richtigen 34″.2386 berechnet sind. Desshalb erhalten alle Declinationen die Corr. —0″.0336 R, im Mittel —0″.4.

155. Die doppelte Correction des Fadenintervalls und um +10″ bei dieser an Fad. IV. um 13′ 59″.3 gemachten Beobachtung ohne Declination, wodurch sie eine Wiederholung des zweitvorhergehenden wird, beruht auf folgenden Gründen: Weder in der Durchmusterung noch bei mehrmaligem Suchen am Himmel habe ich einen Stern finden können, der der uncorrigirten Durchgangszeit entspräche. Er müsste aber, da die Beobachtung nur 22″ nach dem vorhergehenden und 24″ nach dem zweitvorhergehenden gemacht ist, und in dieser Zeit zwei Declinationen eingestellt und abgelesen werden mussten, ganz in der Nähe dieser beiden gewesen sein, und es wäre dann sehr auffallend, dass Bessel ihn nicht in der 15 Tage früher beobachteten Zone No. 517 auch eingestellt hätte, wo der vorhergehende als dupl. 25″ seq. vorkommt. Er ist dies der Doppelstern Str. No. 691, für den die mensurae micrometricae die Distanz 25″.60 den Positionswinkel 300°.21 geben, woraus $\Delta\alpha = -1''.720$ $\Delta\delta = +12''.88$ folgt. Dies stimmt nun sehr schlecht mit der Beobachtung in Z. 525, welche wegen der Eile offenbar flüchtig gemacht ist, und zwar ist nach Z. 517 die AR. des folgenden und die Declination des vorhergehenden die richtige. Die letztere giebt nämlich für 1825 die Position des folgenden 5^{u} 11′ 49″.30 +30° 58′ 44″.8 und daraus nach den Struveschen Micrometermessungen die des vorhergehenden 5^{u} 11′ 47″.58 +30° 58′ 57″.7, während Zone 525 auf 1825 reducirt für den folgenden 5^{u} 11′ 49″.59 +30° 58′ 38″.8 für den vorhergehenden 5^{u} 11′ 47″.19

+3o° 58′ 57″.3 wird, wogegen die fragliche Durchgangszeit, wenn sie durch Anbringung der Correction dem vorhergehenden Componenten des Doppelsterns angepasst wird, die AR. 47″.90 giebt, und das Mittel sehr nahe richtig wird. Ich denke mir nun den Hergang folgendermassen: Bessel stellte die Declination des vorhergehenden Componenten des Doppelsterns vor dem 3ten Faden ein, beobachtete dann den Durchgang von beiden an diesem, aber wie es bei so nahe sich folgenden Durchgängen immer geschieht, ungenau. Inzwischen war Busch mit dem Ablesen der Decl. vielleicht etwas langsam fertig geworden, und Bessel stellte nun die Decl. des folgenden ein, war aber schon ungeduldig geworden, wodurch einmal die Ablesung flüchtig gemacht wurde, und Bessel selbst die Secunde verloren hatte; er sah daher nach der Uhr und versah sich in der Eile um 10″. Bei der Bewegung des Fernrohrs nach Süden sehr bald an die Gränze gekommen, kehrte er um, beobachtete wohl auch etwas eilig noch den vorhergehenden Componenten am 5ten Faden, stellte die Declination nicht ein, weil er sie so eben beobachtet hatte, und schrieb die Beobachtungszeit selbst in eine neue Reihe und falsche Columne.

156. Original ursprünglich Fad. IV., später irrthümlich in V. geändert.

157. Original ursprünglich 3o′, später irrthümlich in 29′ geändert.

158. Die Declinationen der Zone 527 sind mit dem Werthe eines Schraubentheiles = o″.342386, welcher für das Microscop am östlichen Pfeiler gilt berechnet, statt mit dem des westlichen = o″.341971. Da derselbe Fehler aber auch bei Berechnung der Nullpuncte gemacht ist, so ist der Einfluss von geringerer Bedeutung. Man corrigirt ihn, wenn man von den Declinationen o″.000415 (S—1666) absieht. Auffallend sind die grossen Unterschiede zwischen den Bestimmungen des Nullpunctes durch die Ablesungen an den verschiedenen Stellen der Schraube, die bei Berechnung mit dem richtigen Schraubenwerthe noch grösser werden, nämlich 2″.0 und 2″.9. Die Differenzen würden bei Annahme des Schraubenwerthes o″.34675 verschwinden, und man könnte auf die Vermuthung geführt werden, dass der Werth sich verändert habe, wenn nicht bei mehreren folgenden Zonen ähnliche grosse Unterschiede im entgegengesetzten Sinne vorkämen.

159. Original Fad. IV. 7′ 28″.1 woraus die Durchgangszeit des Drucks folgt, aber vielleicht Schreibfehler statt 7′ 21″.8, was die Zeit mit einer Bonner Meridianbeobachtung in Uebereinstimmung bringen würde. Oder EB?

160. Die Zahlen des Drucks sind richtig aus denen des Originals reducirt, aber die Beobachtung lässt sich nur unter Annahme dieses doppelten Fehlers einem vorhandenen Sterne anpassen, kommt dann aber auch in sehr gute Uebereinstimmung mit LL. 4495. Auch ist der Fehler in der Zeitminute kaum zweifelhaft, denn er findet sich auch bei den 3 folgenden Sternen und die Zeit des vierten 2ᵘ 20′ 22″.36 war ursprünglich auch 2ᵘ 19′ 22″.36 eingetragen, bei diesem aber ist der Fehler entdeckt und corrigirt worden.

161. Vergleiche die vorige Note.

162. Die Angabe der Schraubentheile ist im Original mit einem ? versehn, vielleicht sind sie 1184 und demnach die Decl. +45° 10′ 33″.6 zu lesen; dann erhält man vollständige Uebereinstimmung mit einer Bonner Meridianbeobachtung.

163. Der Nullpunct der Schraube hat in dieser Zone wohl nicht dem Nullpunct der Scale entsprochen, wie die vielen Fehler von einer Revolution der Schraube zeigen.

164. Der Stern ist an Fad. IV. um 19′ 7″.9 beobachtet, woraus richtig die Durchgangszeit des Drucks folgt; er kommt aber weder in der Durchmusterung vor, noch ist er bei mehrmaligem Suchen gefunden worden. Ein schwacher Stern 9ᵐ. geht 45″ voraus und ist 15″ nördlicher; mit diesem lässt sich die Beobachtung aber auf keine Weise vereinigen, und eben so wenig giebt es im Bereiche der Zone einen andern Stern, mit dem sie auf irgend eine Weise in Uebereinstimmung zu bringen wäre. Veränderlichkeit ist mir unwahrscheinlich, und ich vermuthe daher, dass zur Zeit der Beobachtung an dieser Stelle ein Planet mit starker Neigung gestanden habe; Eunomia oder Euphrosyne können es nicht gewesen sein.

165. Im Original ist bei diesem und den 6 folgenden Sternen Confusion in den Minuten, aber schon die Folge der Zeiten fordert die Vermehrung um eine Minute bei allen.

166. Der Zweifel in der Secunde ist nach Rümker und einer Bonner Meridianbeobachtung nach der falschen Seite aufgefasst worden.

167. Im Original Fad. I. 8′ 59″.4 aber das Zehntheil ganz undeutlich; Bessel scheint anders gelesen zu haben, aber wie, lässt sich nicht entscheiden, da die Hunderttheile mit dem Fadenintervalle nicht stimmen; ich habe die Lesart 59″.4 adoptirt.

Einige Vergleichungen mit dem Original erhielt ich erst, nachdem der Druck der betreffenden Stellen schon vollendet war, und gebe daher hier die dadurch nöthig gewordenen Ergänzungen:

Zone 426. $17^u\ 46'\ 57''.24$ ist ein Fehler des Drucks.
„ 475. $16^u\ 5'\ 24''.38$; die Durchgangszeit wird mit der geänderten Declination $24''.45$.
„ 485. $19^u\ 11'\ 41''.62$ ist ein Fehler des Drucks.
„ 495. $10^u\ 1'\ 42''.76$; die Durchgangszeit wird mit der geänderten Declination $42''.75$.

Berichtigungen im Verzeichnisse.

p. XXIII. Zone 394 $0^u\ 3'\ 30''.40$ in der letzten Columne ist 104 hinzuzufügen.
p. XXXI. „ 475 $15^u\ 43'\ 10''.51$ lies in Columne V. $15^u\ 43'\ 9''.51$ und in der letzten: Bemerkung recht.

Berichtigungen zur ersten Section des Sternverzeichnisses.

Seite	Zone	No.	
5	—1°	1137	Grösse lies 8.3 statt 3.3.
6	—1°	1447	lies B statt K.
14	—1°	4068	lies 45′ 31″.0 47′.8 B.
43	+0°		nach No. 3222 einzuschalten 9.4 33′ 30″.0 20′.3 B.
106	+4°		nach No. 2297 einzuschalten 9.5 5′ 41″.3 6′.3 B.
133	+5°		die Ueberschrift der ersten Columne lies 21ᵘ—22ᵘ und nicht 21ᵘ—23ᵘ wie fälschlich in den Berichtigungen früher angegeben ist.
159	+7°	2078	hinzuzufügen L.
187	+9°	8	hinzuzufügen K.
198	+9°	3252	lies L statt K.
247	+12°	2248	lies 9.4 35′ 53″.1 28′.1 B.
247	+12°	2249	lies neb. statt $9^m.5$.
261	+13°		Ueberschrift lies +13° statt +31°.
294	+15°	585	dieser Stern ist zu streichen und nicht No. 645 wie früher fälschlich angegeben ist.
311	+16°	574	dieser Stern ist zu streichen und nicht No. 634 wie früher fälschlich angegeben ist.
323	+16°		nach No. 4117 einzuschalten 9.0 57′ 20″.4 40′.8 B.
340	+17°	4146	lies $9^m.1$ 48′ 54″.0 53′.0 B.
347	+18°	1380	lies 43′ 47″.9 27′.6 B.
347	+18°	1387	hinzuzufügen K.
348	+18°		Ueberschrift der zweiten Columne lies +18° statt +17°.

Berichtigungen zur zweiten Section.

Seite	Zone	No.	
74	+24°		nach No. 1137 ist einzuschalten $9^m.4$ 1′ 2″.0 23′.2.
140	+28°	930	hinzuzufügen B.
163	+29°		nach No. 3149 einzuschalten $9^m.$ 51′ 9.″4 26″.4.
176	+30°	1847	lies R statt K.
297	+37°	1488	hinzuzufügen K.

Zone +20°

1—40				41—80				81—120				121—160				161—200			
	0u		+20°		0u		+20°		0u		+20°		0u		+20°		0u—1u		+20°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.4	0	9.5	2.4	9.0	18	36.9	15.5	K	8.5	30	2.6	36.1		9.4	46	9.6	22.4		9.1	59	36.7	39.3	
9.5		10.8	23.5	9.5		52.0	8.5		7.5		4.2	18.5	K	8.8		16.4	13.4	K	9.1	0	15.5	18.0	B
8.9		20.7	2.1	9.5	19	12.1	54.9		9.4		15.4	5.0		9.3		29.7	19.3		9.0		34.1	40.0	
9.1		21.6	55.6	7.3		37.8	26.9	K	8.1	31	9.2	57.0	K	9.4		41.8	12.8	B	9.5	1	1.3	6.7	
9.5		56.8	6.3	9.5	20	47.2	4.1		6.2		49.6	28.4	K	8.9	47	16.2	31.4		9.4		20.6	52.7	B
9.0	1	6.3	47.5	9.4	21	8.5	41.6		9.5	32	11.4	33.8		8.3		19.6	17.2	K	9.2		40.0	13.6	
8.8		42.2	15.2	9.0		10.4	45.8	B	5.5		18.6	39.6	K	9.5		42.7	53.5		9.5		48.2	33.9	
9.4	2	50.3	45.8	9.0	22	0.6	34.8		9.5		23.8	54.6		9.0	49	5.8	50.8		9.5		59.4	3.0	
9.5	3	51.4	28.8	9.4	23	6.5	26.6		9.5	33	11.1	5.1		7.0		45.7	41.8	R	9.5	2	20.1	12.7	
9.5	4	45.3	0.6	9.5		21.1	43.9		7.0		21.4	14.4	K	8.5	50	13.7	13.8	K	9.5	3	8.2	48.7	
9.4		48.1	5.8	9.5		49.2	29.7		9.3		56.9	30.3		6.5		36.4	36.6	K	8.8		33.1	54.3	
8.5	5	44.2	36.7	8.5		52.3	40.8		9.5	34	7.2	18.6		9.0		44.6	19.3		4.7		40.6	15.8	K
9.5	6	33.7	54.0	7.3		56.5	1.2	K	9.5	35	10.9	26.2		9.1	51	4.9	17.9	K	9.5		57.4	43.0	
9.3		57.8	30.5	7.5		56.6	18.6	K	8.9		59.9	1.9	K	9.5		15.9	26.2		9.0		57.4	33.0	K
7.2	7	27.6	43.4	K	9.5	24	0.1	8.0		9.0	36	37.1	25.2		9.5		17.2	17.0		9.5	4	51.6	22.4	
9.4	8	18.1	30.3	9.2		0.7	50.2		9.0	37	11.7	40.0		9.2		39.8	0.2		9.5		55.2	8.3	
9.5	9	10.5	2.9	9.4		9.5	4.2		9.5		48.3	16.9		9.5	52	27.4	48.3		9.0	5	35.1	25.1	
9.0		30.7	57.8	K	9.5		25.7	15.5	9.4	38	10.2	33.1		9.5		27.5	2.6		9.0	6	15.7	42.4	
9.5	10	0.1	36.9	B	9.5		33.0	58.6	9.4		11.4	48.4	R	6.9		44.9	26.8	K	9.5		55.1	30.3	
9.2		7.6	42.1		9.4		40.6	42.0	9.5		18.6	52.0		9.5	53	18.5	1.1		9.5		58.2	48.0	
9.5		7.8	33.4		8.5		48.4	57.0	8.5		55.2	42.4	K	9.4	54	13.0	48.0		9.5	7	2.7	21.3	
8.5		57.7	40.0	9.5	25	23.5	47.0		9.5	39	3.3	8.7		9.4		14.1	42.8		9.5	8	9.3	51.5	
9.5		58.5	6.1	9.0		27.3	36.2		7.3		5.9	50.3	K	9.5		41.0	54.7		9.5		15.9	4.6	
9.0	11	38.5	2.8	9.0		54.7	3.7		9.3		7.5	10.7	B	9.5	55	4.2	22.8		9.5		49.1	20.7	
9.4		55.2	50.0	B	9.5	26	53.6	47.9	6.5	40	14.3	7.5	K	9.0	56	11.9	28.1		9.5		51.6	46.2	
9.5	12	40.1	41.0		9.0		55.5	34.4	K	8.4		16.2	13.1	K	8.8		17.3	11.0	K	7.0	9	1.1	18.6	K
9.3		41.4	54.2		9.0	27	4.1	36.9		9.3		44.3	48.9		8.5		47.1	43.5		8.8		12.5	5.5	K
9.5	13	6.7	11.5	B	9.5		10.2	7.2		9.0	41	5.7	15.2		9.5		53.7	50.8		9.5		32.2	4.5	
9.4	14	1.6	47.5		9.5		56.3	19.9	B	8.5		22.6	45.9		9.5	57	7.2	37.3		9.5		33.4	43.9	
8.9		3.1	26.5	K	7.8	28	11.7	58.2	K	9.5		26.7	53.3		9.5		8.3	3.9		8.6		34.4	9.8	B
9.3		13.9	2.8		8.7		15.9	9.0	K	7.5	42	52.5	22.7	K	9.4		12.7	0.5		9.2		34.5	17.0	
9.5		33.2	33.5		8.3		17.9	31.9	B	8.7	43	11.9	55.1	K	9.2		18.7	58.8		8.5		39.6	19.2	B
9.1		47.7	45.2		9.4		32.6	36.5		9.3		25.3	55.7		9.1		35.2	50.0		9.3	10	26.8	6.9	
8.5	15	6.4	52.2		8.5		42.4	46.8	K	9.5		40.9	8.6	B	8.8		47.4	20.7	B	9.0		27.2	1.0	K
9.5		54.1	46.5		9.5		50.4	43.8		9.5	44	13.0	53.3		8.9		56.7	52.4		9.5		51.7	10.0	
9.5	17	33.9	25.9		8.0		51.3	15.6	K	9.5		40.1	39.3		5.0		57.3	42.4	K	9.4	11	27.8	32.7	
9.5	18	3.5	1.1		9.4		52.2	51.8		7.5		46.4	36.9	K	6.0		58.3	42.0	K	8.5		38.7	6.4	K
8.1		25.8	13.1	K	9.3	29	2.6	31.4		9.3	45	21.2	5.7		8.0	58	6.5	11.0	K	9.0		53.6	30.1	R
9.2		26.2	39.0	B	9.5		38.2	15.1		9.5		44.7	30.0		9.5	59	3.8	38.6		9.0	12	26.2	8.6	
9.4		28.3	4.4		9.0		42.7	49.0		8.8		47.1	36.6		9.5		18.5	2.4	B	8.6		28.1	36.3	R

+20° 1ᵘ—2ᵘ

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+20°		1ᵘ		+20°		1ᵘ—2ᵘ		+20°		2ᵘ		+20°		2ᵘ		+20°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
8.7	13	3.0	51.7	K	8.0	30	0.4	32.1	K	9.5	51	34.1	28.2		9.4	13	2.3	54.9		9.4	31	45.0	28.4	
9.4		7.3	2.9		9.5		14.6	12.4	B	6.5		34.5	21.0	K	9.1		56.1	0.5		9.5	32	16.9	5.7	
9.5		7.9	28.6		9.4		25.3	18.7		9.3	52	13.9	17.5		9.1	14	4.9	37.1	B	7.7		19.6	33.6	L
9.4		46.9	31.4	B	6.5		41.4	40.5	R	9.5	53	35.3	15.8		9.3		11.3	5.7		7.8		27.8	35.9	L
8.9		48.4	37.9	K	9.5	31	7.0	24.5		9.5		47.8	30 5		8.5		26.4	39.0	K	9.5		49.2	55.8	
9.2	14	12.7	50.8		9.5		32.4	51.1		8.2	54	26.0	39.3	K	9.4	15	32.1	59.5		9.4		58.4	0.3	
9.5	15	14.6	20.0		9.5	33	15.3	45.8		9.5	55	1.1	15.4	B	9.1		34.8	24.3		9.5	33	45.3	8.3	
9.1		33.3	1.3	B	9.5		15.5	9.4		8.3		33.5	34.4	K	8.5		38.5	45.1	K	9.5		59.9	40.4	B
9.5		45.5	28.6		9.5		32.5	0.7		9.5		51.6	58.4		9.2		58.5	19.6		8.6	34	6.7	15.5	
9.5	16	2.7	9.3		9.0	34	42.7	45.6	B	8.9		53.1	50.0		9 4	16	20.7	58.1		9.5		8.8	43.1	
9.5		52.6	39.7		9.0		43.6	20.7		9.5	56	9.4	53.3		9.5		31.6	41.7		9.5	35	18.7	33.5	
9.4		54.4	49.0		9.5	35	4.9	46.7		8.2		24.3	20.2		9.4	17	5.1	58.9		7.2		27.8	31.5	K
9.5	17	16.2	22.4		8.8		21.3	45.9	K	8.3		37.7	29.3		8 8		46.7	52.3		8.7		41.9	21.3	
9.5	18	14.2	40.6	B	9.2		41.6	15.5	R	8.8		40.3	33.5		9.4	18	1.4	25.2		8.8	36	2.9	25.7	K
9.5		21.1	1.2		9.2	36	4.5	32.3	K	9.4	57	17.3	41.8	B	9.3		23.3	58.4		7.7		33.6	59.3	K
9.5		24.7	50.3		9.5		18.7	18.1		9.4	58	38.6	15.5		9.5		29.4	57.0		9.0		54.8	46.0	B
9.5		38.0	56.1		9.5		25.4	55.5		9.5	59	35.6	18.3		9.5	19	42.8	55.2		9.3	37	27.3	1.5	
9.0		53.8	57.2		9.5		43.6	56.0		9.5		36.0	39.3		9.3		49.7	27.0	B	7.3		35.3	4.0	K
9.5		56.6	34.4		9.5	37	53.7	18.5		9.3	1	29.0	13.4		8.9	20	2.7	30.5		9.5		54.7	4.4	B
9.5	19	41.8	7.4		9.5	38	24.3	26.8		9.5	3	5.9	10.4		9.4		9.6	17.3		9.4	38	2.5	28.5	
9.1		42.5	18.5	B	9.4		42.8	1.3		7.5		14.8	41.5	K	9.4		29.4	17.8		9.3		31.5	47.5	
8.7		43.6	57.6	K	9.5	39	12.0	43.0		9.5		16.3	12.4		9.3		42.1	32.6	B	8.2	39	13.4	44.0	B
9.4	20	27.7	10.5	B	8.2		13.0	27.5	K	8.4		18.6	4.1	K	8.4		45.6	32.4	K	9.3		39.5	22.6	
9.5		28.5	3.8		9.5		20.1	31.0		9.5		21.0	54.7		7.5	21	5.3	57.0	K	9.5		42.2	13.9	
9.5		48.2	23.1		8.5		31.0	40.7	K	9.5		53.4	41.8		8.1		12.8	11.6	K	9.2	40	9.0	20.1	B
7.8	21	7.4	59 0	K	9.3		40.3	38.6	B	9.5	4	3.1	53.4		9.4		36.9	7.2		9.1		35.0	25.5	
9.2		10.1	50.4	K	8.4	40	6.9	55.6	K	9.4		4.5	50.7		9.5		50.0	53.5		8.9		55.0	39.1	K
9.2		14.7	58.4		9.5		16.0	9.8		5.5		41.7	31.8	K	8.2	22	28.3	14.0	K	9.5	41	2.6	14.3	B
8.5		34.5	15.5	K	9.0	41	8.5	39.3		9.1		49.6	3.7		7.8		33.0	23.6	K	9.5		33.6	15.0	
9.4		59.9	29.0		9.3		13.1	58.2		9.5	5	31.8	43.0		9.0		44.4	51.6		9.5	42	2.5	32.3	
8.9		59.9	46.9		9.5	42	0.5	54.8		8.5		57.6	8.2		8.8		56.9	25.5		9.5		23.5	12.2	
9.5	22	4.0	48.5		9.0		11.7	29.7	K	9.0	6	1.1	48.9		9.4		58.6	39.2		9.5	43	21.7	54.2	
9.5		31.6	26.1		9.5		31.5	49.8		9.4		19.8	20.4		9.5	23	19.1	58.9		9.5	45	18.8	59.9	
9.5		44.7	4.9		8.8		36.6	47.3		9.1		22.3	25.5	K	7.3		37.2	43.7	K	9.1	46	10.0	43.3	
9.5		46.1	8.5		8.8		40.5	37.4	K	9.4		26.2	31.9		9.4		58.9	2.0		8.6		50.1	12.4	B
9.0	24	52.3	38.5	K	8.5	43	1.7	24.3	R	8.8		31.5	40.5		7.7	24	5.3	28.7	K	9.0	47	25.5	25.3	
9.3		53.3	17.8	B	9.0		2.7	46.5		9.3		44.9	16.2	B	9.5		5.3	10.2		8.8	48	28.5	50.2	K
9.5	25	6.8	50.3		9.0		33.3	39.5		8.7		49.0	19.3	K	8.1		9.4	49.1	K	9.4	49	23.7	15.5	B
9.5		9.3	44.3		9.0	44	33.5	20.8	R	9.5	7	26.7	57.8		9.4		11.8	58.8		9.5		45.0	48.8	
9.0		29.9	25.6	K	9 3	45	6.8	55.2		9.5		41.3	39.3		9.4		21.7	12.4		6.0		47.3	4.0	K
8.7	26	18.3	25.9	K	9.4		21.9	17.8		9.4		56.6	1.5		8.7	25	5.1	19.4		9.4	50	3.3	4.6	B
9.5		32.4	48.1		8.8		26.0	54.5	K	9.5	8	20.1	37.6		9.5		15.9	12.2		9.0		15.5	39.9	
9.5		45.8	21.8		9.0		40.1	34.4		8.8		55.0	53.3		9.4		24.9	6.0	B	9.2		28.0	52.7	
9.0		53.8	43.9		9.4		45.3	17.9		9.5		59.1	20.6	B	8.8		48.4	30.5		4.2		55.8	46.1	K
9.0		54.7	0.6		9.5	46	26.1	28.2		9.5	9	1.8	38.9		8.8	26	2.0	31.8		8.7	51	21.7	56.8	K
9.5	27	17.3	32.9		2.5		37.5	5.8	K	9.3		12.6	56.1		9.0		14.0	1.5		9.5	52	14.5	30.2	
8.5		24.6	14.9	K	8.7		51.2	35.4		9.5		18.2	49.9		9.5		19.5	55.7		9.5		19.2	59.2	
9.5		41.7	32.5		9.3	47	22.5	18.8		9.5		41.4	1.2		9.1		20.1	51.4		9.0		20.8	27.4	K
9.2		47.9	49.0		8.8	48	10.8	37.4		9.5		46.8	21.5		9.5	27	8.7	27.6		9.4		44.0	21.1	
9 2		54.2	4.6		9.5		39.7	19.6	B	9.5		52.3	34.5		9.5		15.5	2.8		9.5	54	4.5	15.0	
8.4		57.4	57.0	K	9.1	49	7.6	49.8		9.5	10	17.5	49.6	B	9.3		37.0	14.5		9.1		26.0	22.2	K
9.4	28	23.9	54 9		8.9		20.4	12.3		9.5		57.7	6.5		8.5	28	2.5	15.0		8.2		42.0	58.7	K
9.5		32.8	5.3		9.5		32.3	30.7		9.5	11	19.1	19.8		8.3		33.8	4.0	K	8.8		45.8	35.3	K
9.1		40.7	49.7		8·2		55.4	39.6	K	9.0		45.7	48.3		9.4	29	14.7	44.6		9.5	55	15.5	38.1	
9.1		52.4	31.1		9.5		56.8	2.2	B	9.5		47.5	26.7	B	9.0		15.5	39.9		9.4		33.0	55.4	
9.0		57.2	56.4	R	9.3	50	4.6	23.4		8.8		58.4	49.7	K	8.8		22.3	47.0		7.7		56.1	54.4	K
9.4	29	3.6	53.2		9.5		7.7	1.2	B	9.5	12	5.5	27.4		8.5		22.7	31.5	K	9.5	56	4.5	41.5	
8.5		38.4	56.0	K	9.3	51	20.0	54.0		9.4		42.4	33.6		8.6		54.9	5.6		9.5		6.5	14.3	
9.3		46.0	47.8		9.0		25.8	47.3		9.0		44.8	41.4		9.3	30	20.4	46.3		9.5	57	7.5	38.5	
9.5		54.3	13.0		9.0		32.8	18.5	K	9.4		50.2	45.0		9.5		26.9	38.2		9.5		12.3	7.9	

501—560

	2ᵘ—3ᵘ	+20°	
m	′ ″	′	
7.5	57 13.0	19.8	K
9.5	26.5	0.2	
9.5	58 3.0	20.8	B
9.1	7.8	32.6	
8.5	21.3	5.2	K
9.5	27.0	46.7	
8.5	34.0	18.1	
9.5	59 17.5	42.2	
9.5	43.3	49.5	
9.0	0 28.0	39.1	
8.7	54.5	11.2	B
9.5	55.8	27.8	
9.5	56.7	33.7	
6.9	1 2.3	12.4	K
9.5	52.1	32.8	
7.8	54.5	42.7	K
9.4	2 47.0	33.3	
8.6	55.0	32.9	K
8.7	3 0.0	20.9	B
9.5	13.5	25.6	
9.0	54.3	55.2	
8.5	4 43.3	10.8	
9.1	46.0	46.0	
9.5	5 22.4	43.0	
9.5	46.5	36.0	
9.4	6 3.5	3.1	
4.5	34.5	30.5	K
8.7	7 9.9	3.0	K
8.3	25.0	39.1	K
8.0	34.2	9.6	B
9.4	40.8	29.8	B
9.3	44.0	57.8	
9.5	8 9.5	38.7	
9.5	37.1	4.3	
9.5	9 12.9	4.4	
9.1	10 20.4	12.5	
9.4	24.0	33.9	
9.2	50 6	49.5	
8.7	11 31.8	57.1	
9.5	44.7	33.6	
8.6	12 38.8	7.1	B
9.5	41.2	28.0	
5.0	51.0	37.3	R
8.7	13 6.4	55.1	K
9.4	28.0	30.4	
9.5	36.2	56.2	
9.4	50.5	3.0	B
9.3	54.3	5.3	B
9.5	14 0.2	10.3	B
9.5	8.5	35.0	
5.0	24.8	13.4	K
9.5	26.1	46.3	
9.5	58.0	58.5	
7.0	58.5	27.0	K
9.5	15 13.8	28.3	
5.8	16 4.2	17.4	K
9.4	16.2	42.2	
8.0	51.0	41.5	K
9.5	17 2.5	22.5	
9.1	8.0	7.9	B

561—620

	3ᵘ	+20°	
m	′ ″	′	
9.5	17 8.0	10.3	
9.4	9 2	8.8	
9.5	22.2	38.1	
9.5	26.3	56.4	
9.5	59.7	29.1	
9.5	18 1.5	41.1	
9.5	7.5	37.2	
8.8	19.0	55.5	
9.5	36.2	56.0	
9.5	55.5	36.5	
9.5	19 16.5	32.9	
7.7	28.1	25.3	K
7.2	20 25.9	6.6	K
9.0	21 4.5	35.3	R
9.5	14.1	58.3	
9.5	22.5	22.2	
9.5	51.0	26.6	
8.2	22 54.0	16.6	B
9.5	56.8	49.5	
9.5	23 7.0	49.1	
9.4	27.3	53.9	
9.5	31.2	24.2	
9.5	31.6	4.2	
9.5	40.1	55.4	
9.5	24 0.5	15.0	
9.5	13.2	19.5	
9.5	18.8	5.0	
9.5	37.7	56.4	
9.5	25 24.2	31.2	
9.5	36.3	4.7	
9.5	44.6	52.4	
9.5	48.2	14.0	
9.5	26 6.3	2.9	
9.5	13.3	6.6	B
9.5	22.0	56.6	
8.3	32.3	31.5	K
9.5	27 22.2	41.8	
9.0	29 7.3	51.4	K
9.5	39.5	36.4	
9.5	30 7.5	48.8	
9.5	25.8	13.9	
6.0	35.3	26.0	L
9.4	57.5	42.5	
9.0	59.6	50.7	K
9.4	31 20.3	7.0	
9.3	36.3	44.7	B
7.0	56.2	56.2	K
8.7	32 39.9	11.2	
9.5	49.2	43.7	
9.3	52.4	7.4	
9.5	33 49.3	4.2	
9.5	52.7	21.1	
9.5	54.2	29.9	
9.5	55.2	42.3	
9.5	34 1.8	5.4	
7.9	13.4	48.6	K
9.5	35 2.3	56.7	
8.2	11.9	15.8	P
9.5	56.1	12.4	
8.9	57.7	2.0	K

621—680

	3ᵘ	+20°	
m	′ ″	′	
6.2	36 3.4	28.0	R
8.0	19.2	17.4	K
9.5	57.3	18.3	B
8.0	37 5.2	47.3	K
9.5	8.2	36.0	
9.5	46.0	58.7	B
9.3	48.1	7.6	
9.0	38 6.2	26.2	
9.2	17.8	55.4	
9.5	25.2	55.1	
9.1	34.2	20.0	
9.5	56.0	55.6	
9.5	39 1.7	7.6	B
9.5	16.3	48.7	B
9.5	23.2	23.4	
9.5	30.2	30.7	
8.2	43.9	54.5	K
8.0	40 34.1	52.6	K
9.5	42.2	21.2	
9.5	57.2	18.8	
9.5	41 4.0	2.0	
9.5	14.2	59.2	
8.5	21.2	43.0	K
9.0	59.0	30.6	
9.5	42 18.1	58.2	
9.5	23.2	56.1	
8.9	34.9	30.7	
9.4	43.1	7.7	
9.4	43 40.0	16.8	
9.5	47.2	32.9	
9.5	45 1.1	30.5	
9.5	7.6	5.5	
9.2	27.5	53.8	
8.9	30.8	9.5	B
9.4	31.2	23.8	
9.3	54.2	39.6	
9.5	58.6	44.4	
9.5	58.9	58.6	
9.5	46 29.7	33.5	
8.9	30.3	27.1	B
9.5	47.2	52.2	
9.5	50.2	15.9	
9.2	47 34.6	13.9	
8.2	39.2	21.8	K
9.5	44.2	39.0	
9.1	48 29.6	10.1	
9.5	30.7	24.6	
8.4	38.1	52.3	K
7.5	42.8	54.5	K
8.8	52.9	13.9	
9.5	49 30.3	39.4	
9.2	30.7	15.3	K
9.5	35.2	35.2	
8.6	50 8.7	44.4	L
9.5	18.6	43.3	B
9.3	18.6	5.0	
9.5	22.0	58.8	
9.3	51 12.7	2.6	
9.5	13.2	27.6	
8.0	19.6	53.6	K

681—740

	3ᵘ—4ᵘ	+20°	
m	′ ″	′	
9.0	51 28.6	57.4	B
9.5	32.2	45.7	
9.1	34.1	57.2	B
8.4	52 14.2	0.4	K
9.4	36.3	0.7	
9.5	53 7.1	11.7	B
9.5	44.0	30.2	
8.8	54 16.6	38.2	K
9.4	27.1	50.0	
9.2	30.0	45.6	B
9.3	35.3	45.9	B
8.0	55 27.1	40.2	K
9.5	30.7	21.0	
8.8	50.5	16.5	B
8.5	56 27.0	27.2	K
8.8	57 14.3	48.6	
9.4	31.4	2.2	
8.6	44.1	16.1	K
8.8	47.9	44.1	
9.4	58 24.8	41.6	B
8.7	36.3	52.9	K
9.5	59 11.4	6.7	
9.2	11.6	53.0	K
9.1	0 11.3	17.5	B
9.5	51.9	2.4	
9.5	55.2	34.7	B
9.5	1 31.6	8.2	
9.4	31.8	58.8	
9.4	35.0	48.7	B
9.5	48.0	14.6	
9.5	3 2.0	37.5	
9.5	20.1	30.0	
9.5	32.4	6.7	
9.0	33.1	42.1	
9.0	43.0	21.2	K
9.0	4 16.0	20.9	K
9.5	5 23.4	41.1	
9.5	6 25.6	16.7	
9.5	51.0	21.2	
8.7	7 3.5	55.1	K
8.1	10.8	26.9	K
9.5	30.6	12.9	
9.5	58.2	16.7	
5.7	8 46.6	13.6	K
8.8	49.2	8.2	K
9.5	55.6	42.8	
9.2	57.3	11.7	B
9.5	9 6.6	31.3	
9.5	11.7	39.1	B
9.5	50.0	30.6	
8.8	10 27.9	57.0	K
9.5	39.1	1.5	
6.2	53.2	47.7	K
9.5	11 0.0	47.0	
9.0	1.1	41.7	K
9.5	12 13.3	5.8	B
9.5	18.0	53.9	
9.5	36.5	51.9	
9.5	55.5	10.1	
7.0	59.2	42.2	K

741—800

	4ᵘ	+20°	
m	′ ″	′	
7.2	13 3.2	50.3	R
9.5	28.1	11.5	
9.5	53.0	21.8	
6.5	53.1	28.3	K
9.0	14 32.0	28.1	K
9.2	35.9	52.4	R
9.3	47.6	14.2	
9.0	49.5	50.8	K
9.0	55.9	5.6	
8.7	58.0	30.3	K
6.2	15 0.2	37.9	K
9.3	16.0	35.2	
9.1	16 15.6	46.1	R
8.6	17 15.0	48.8	K
9.5	18 13.7	35.5	
8.6	36.5	40.0	R
9.5	55.8	1.0	
9.4	19 48.5	32.1	
9.4	51.7	42.2	
8.8	20 6.6	30.7	
8.3	10.1	20.9	R
9.5	29.0	16.7	
9.4	21 0.8	54 0	
9.1	21.9	32.7	
9.5	33.1	36.2	
9.2	33.4	33.1	R
8.7	36.1	39.8	K
9.5	49.5	39.1	
9.4	53.6	13.9	
9.5	22 13.5	55.8	
9.4	23 5.6	58.6	
9.0	5.7	28.2	
9.5	27.0	17.0	
9.5	25 2.0	51.2	
9.4	43.7	11.7	
8.5	26 0.6	48.4	K
9.3	2.0	2.2	
8.3	12.1	48.7	K
9 5	23.0	45.3	
9.5	37.4	51.2	
9.3	27 9.3	10.9	
9.5	28 18.0	31.3	
9.0	21.6	44.9	
9.5	40.0	13.6	
6.0	29 43.2	23.7	K
9.1	55.7	50.2	
9.5	30 0.8	56.5	
9.5	12.6	37.6	
9.3	18.4	29.3	B
8.8	25.7	17.1	K
9.1	31 1.1	27.9	
9.4	13.9	59.3	
9.1	15.8	47.1	R
9.3	22.4	24.1	
9.5	32.5	47.4	B
8.8	37.0	15.0	K
9.5	44.4	47.6	
9.4	52.5	49.4	R
9.1	32 10.6	34.5	
9.0	17.1	0.7	K

801—860				861—920				921—980				981—1040				1041—1100			
	4ᵘ		+20°		4ᵘ—5ᵘ	+20°			5ᵘ	+20°			5ᵘ	+20°			5ᵘ	+20°	
m	′	″	′		′	″	′		m	′	″	′		m	′	″	′		
9.5	32	25.8	1.2	B	9.4	52	14.7	3.4	B	9.5	11	2.5	29.3	9.5	23	52.0	53.9		9.5	32	22.3	31.1	
8 8		50.0	37.3	L	9.5		29.4	49.4		9.5		6.0	22.0	8.8		57.3	48.7	R	9.5		24.0	45.5	
9.2		50.6	17.8		8.0	53	8.3	36.3	K	9.5		10.6	38.0	9.4	24	6.4	49.1		9.5		25.7	16.1	
9.5		53.0	58.5		9.5		8.4	55.0		9.0		25.8	59.8	K 9.4		12.5	51.8	B	9.5		30.0	42.9	
9.2	33	5.1	51.9		9.5		31.9	27.1		9.5		33.6	23.7	9.4		29.3	3.7		9.5		33.5	41.0	
9.5		35.1	51.9		9.4		40.8	10.2	B	9.5		34.7	1.0	9.5		46.9	13.4		9.5		33.9	42.8	
9.0	34	19.2	21.9	R	9.5	54	20.7	4.2		9.4		56.7	55.7	9.5		56.4	2.2		9.3	33	4.0	50.2	
8.5		31.5	21.6	K	9.3		33.1	57.7		9.1		59.1	48.8	9.5	25	1.9	33.5		9.5		6.5	38.3	
9 3		59.3	22.6		8.3		40.1	42.9	K	8.6	12	0.4	41.2	6.3		3.0	21.9	K	8.8		18.0	25.2	R
9.5	35	15.5	2.1	B	9.5		53.5	59.7		9.5		12.5	32.4	8.9		8.7	54.9	K	9.5		24.7	53.1	
9.4		34.2	2.2	B	9.5	55	1.0	0.3		9.5	13	2.0	14.5	9.1		29.4	24.3	K	9.3		35.0	44.2	
9.5		44.8	34.8		9.5		18.1	37.0		9.3		10.4	46.4	9.4		30 0	54.9		9.5		38.0	25.0	
9.0		46.7	39.0		9.5		49.0	7.8	B	9.4		30.9	47.8	8.8		30.1	57.5	K	9.2		46.9	46.5	
9.5	36	20.6	35.8		9.5		49.4	22.8		9.4		31.6	11.7	9.5		39.9	9.9		8.3		48.0	31.8	
9.5		34.5	25.3		9.3	56	39.1	39.8		9.5		49.8	34.2	9.5		42.4	47.7		9.5		55.1	11.2	
9.5		48.2	17.0		9.5	57	3.5	45.0		9.4	14	1.4	46.9	9.5		56.8	4.0		9.5		56.6	33.0	
9.1	37	40.2	54.3	K	9.3		16.9	30.4		9.5		16.1	42.9	9.5	26	2.8	53.6		9.5	34	13.0	23.8	
9.5		43.6	4.8		9.3	58	5.9	28.7		9.5		38.0	7.4	9.5		6.0	14.9		9.5		18.8	55.7	
9.5	38	10.7	49.5		9.5		12.0	47.5		9.2		48.7	25 8	B 9.5		6.0	31.4		9.5		21.9	3.4	
9.3		28.5	37.5		9.5		13.6	15.3		9.2		57.3	32.3	9.5		9.2	22.1		9.5		40.0	5.3	
8.7		35.4	9.8		9.4		39.4	26.4		8.7	15	10.1	26.2	K 9.5		16.8	41.2		9.4		42.7	14.3	
9.0		36.0	18.4		9.5		52.5	31.5		9.1		18.0	14.9	L 8.8		25.3	7.9		9.5		55.1	58.2	
9.0	40	3.6	50.9	K	9.2	59	2.6	53.3	K	9.5		18.1	33.4	9.4		26.5	55.9		9.1		57.4	37.1	
9.3		11.9	5.9	B	9.5		9.7	36.6		9.0		32.1	52.0	K 9.5		34.4	12.3		8.8	35	0.0	25.8	
9.5		24.7	29.5		5.3		14.1	13.2	K	8.4		39.5	0.2	L 9.4		41.0	48.4		8.8		0.6	21.1	
9.5		25.0	5.9		9.5		31.0	11.0	B	9.0	16	3.8	44.3	9.5		42.8	54.0		9.5		8.9	36.5	
9.5	41	15.4	16.4		9.5	0	9.1	32.9		9.5		6.5	16.4	9.1		51.0	42.2		9.5		22.4	13.9	
9.3		22.9	29.0		9.5		17.7	27.0		7.5		34.0	27.0	K 9.5		54.0	18.5		9.2		23.0	46.8	
9.5		42.3	1.3		8.6		27.8	20.0	K	9.4		55.2	16.7	8.5		59.7	48.1	R	9 4		43.7	29.0	
9.1		42.5	50.0		8.4		38.0	15.9	K	9.5	17	6.8	24.5	9.3	27	7.2	20.0	R	8.9	36	3.6	38.0	B
9.5	42	41.4	3.1		9.5		41.9	3.5		8.9		12.2	59.7	K 9.1		14.1	56.4		9.3		4.1	39.0	
9.5		45.5	5.3	B	9.5		54.0	10.7		9.5	18	26.0	25·8	9.5		24.0	21.0		9.5		7.9	34.2	
9.2	43	10.2	56.3		9.2	1	1.6	23.6	B	9.3		52.7	33.8	9.4		33.9	59.3		8.2		9.0	28.6	K
9.5		44.8	26.1		9.4		1.8	52.6		9.5		53.4	59.0	9.3		46.4	27.7	R	9.5		10.7	57.0	
9.5	44	9.7	35.8		9.5		10.9	47.2		9.5		56.5	27.0	9.2		51.3	14.4		9.5		18.8	50.1	
9.2		12.7	52.8		9.1		22 1	44.6	K	9.5		59.1	21.7	9.5		58.8	6.9		9.5		23.0	50.0	
9.3	45	1.0	24.7		8.1	2	10.6	24.0	K	9.2	19	11.9	43.4	9.5	28	23.4	39.9		9.5		23.0	54.3	
9.0		25.9	4.3		9.5		12.4	8.8		9.5		37.8	31.0	8.5		25.4	38.5		9.5		23.8	56.9	
9.1		31.6	45.9		9.5		43.5	55.4		9.3		38.6	50.0	9.0		27.7	15.3		9.5		25.0	59.8	
8.5	46	6.2	51.2	R	9.5	3	36.9	22.8		9.5	20	3.8	46.1	9.5		47.1	38.6		9.5		33.6	39.0	
8.8		16.9	42.8		9.5	4	11.6	59.5		7.5		22.0	19.3	R 9.3	29	0.2	22.2		9.5		37.3	55.2	
9.3		18.6	15.6		9.4		54.1	26.6		9.3		24.0	45.3	B 9.4		24.0	17.0		8.5		56.8	26.6	K
9.3		27.2	31.7		9.5	5	7.1	2.8		8.8		30.5	4.0	9.5		30.6	27.8		7.7	37	1.4	37.4	
9.4		32.0	54.1		9.5		45.3	5.5		9.5		37.7	18.6	9.5		34.0	53.5		9.4		20.6	59.6	
9.2		34.6	10.1		9.3	6	11.9	42.6		9.4		52.9	55.4	9.5		48.8	34.4		8.2		22.7	11.2	B
8.5		36.8	4.1		9.5		21.1	34.2		9.5	21	4.0	35.6	9.5		50.7	26.9		9.2		23.3	9.5	
9.5	47	22.6	4.5	B	9.5		34.0	29.7		9.3		17.8	9.7	9.1	30	2.5	10.4	K	8.7		25.0	13.2	K
9.5		48.1	29.9		9.5	7	6.6	56.8		9.5		35.9	31.2	9.4		9.1	59.9		9.5		31.4	20.5	
9.4		49.5	5.4		8.5	9	1.7	22.8	K	7.5		38.0	26.2	K 9.5		49.9	48.5		9.4		31.9	21.9	B
9.5	48	8.1	26.1		8.6		3.0	14.8	K	9.5	22	6.1	35.3	9.4		54.6	42.3		9.5		36.2	39.6	
9.5		15.2	21.7		9.4		19.1	5.1		9 5		7.9	8.7	9.3		55.2	55.9		8.5		55.3	14.7	K
9.5		19.0	55.1		9.5		43.4	30.1		9.4		22.8	34.6	9.4		58.9	21.8		9.3	38	8.0	16.1	
9.3		41.1	15.5		9.3		44.8	21.8		9.1		23.5	19.3	9.2	31	8.0	20.0	R	7.3		9.8	6.7	K
9.5		49.2	46.5		9.5	10	2.7	40.2		8.5		30.0	4.2	K 9.0		27.7	24.0		8.8		14.0	41.3	R
8.6	49	30.1	4.1	K	9.5		21.1	18.7		9.5		58.0	36.3	9.5		29.1	23.0		7.4		20.1	13.1	K
9.5	50	3.1	53.3		9.1		26.1	15.9		9.5	23	13.5	18.7	9.5		30.6	27.0		8.9		34.9	34.9	B
9.5		40.9	49.5		9.5		39.9	7.0		8.7		16.6	38.8	R 9.5		44.9	3.7		9.5		36.1	12.1	B
9.2	51	9 4	12.4		8.6		50.5	3.9	K	9.3		26.5	56.1	R 9.5	32	3.0	28.9		9.2		42.0	3.2	
9.5		23.0	52.7		9.5		51.4	43.5		9.5		37.0	18.6	9.5		9.3	54.8		9.5		51.7	38.6	
8.2		37.9	42.9	K	9.3		52.3	52.0		9.5		40.0	49.5	9.5		21.9	48.0		8.0		59.2	53.2	K

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ		+20°		5ᵘ		+20°		5ᵘ—6ᵘ		+20°		6ᵘ		+20°		6ᵘ		+20°	
m				m				m				m				m				
9.5	39	17.9	28.3	9.4	45	42.3	33.5	9.4	53	11.2	54.9	9.2	0	43.7	54.1	9.5	7	40.4	58.2	
9.2		35.9	16.5	5.0		48.0	14.8	K 9.5		23.4	30.9	9.2		51.8	53.9	9.4		44.1	40.0	
9.1		38.0	41.3	9.4		52.4	3.7	9.4		36.7	1.3	9.3		52.5	6.4	9.5		44.2	48.8	
9.0		40.7	30.8	9.4	46	12.3	43.5	9.5		42.1	2.7	7.7	1	2.1	30.8	K 9.3		47.3	36.1	
7.3		44.0	48.9	K 9.5		14.0	42.1	9.5		48.3	19.0	9.3		8.2	6.4	9.5	8	20.6	23.2	
8.5		46.0	47.4	K 9.5		18.6	9.4	9.5		57.8	49.9	9.4		9.4	0.5	9.5		20.6	18.0	
9.5		49.1	56.0	9.4		25.9	46.0	9.3	54	4.9	47.7	R 9.4		11.6	38.6	9.5		37.3	41.8	
8.5		55.9	11.2	8.6		36.6	25.5	K 9.5		19.7	23.0	9.5		16.1	33.3	8.7		50.4	51.7	
9.5		57.2	38.2	9.5		39.0	8.4	7.7		28.8	34.9	L 9.5		16.4	39.7	B 9.5	9	1.5	20.2	
9.0		58.1	33.6	9.3		44.5	43.7	9.5		35.7	24.3	9.5		46.3	31.6	9.4		1.5	25.7	
9.0	40	14.1	57.8	K 8.2	47	0.1	26.2	K 9.5		59.8	58.8	9.5		57.2	51.9	9.3		3.8	18.2	
9.3		17.9	57.5	B 9.2		15.3	5.2	R 9.5	55	15.5	53.3	B 9.5	2	8.2	25.5	B 8.5		5.1	30.0	
9.4		20.0	1.6	9.5		22.1	40.8	5.1		18.7	8.4	K 9.4		14.5	38.0	9.5		17.8	4.8	
9.5		31.5	24.9	9.5		27.2	48.5	9.4		28.9	28.5	B 9.5		19.1	0.4	9.5		18.0	12.4	
9.1		41.1	59.2	K 9.5		31.7	0.9	9.5		37.3	28.3	B 9.5		20.8	57.6	9.5		21.5	47.6	
9.0		43.4	31.8	9.5		34.5	15.0	9.1		39.7	23.8	9.0		20.9	35.4	9.5		31.5	34.8	
9.0		49.8	41.6	9.5		39.3	35.6	9.2		40.6	11.9	K 9.3		24.7	12.8	9.1		40.3	20.2	
9.5		56.0	37.1	8.7		42.3	34.1	9.2		43.0	3.5	9.4		25.9	8.5	B 9.5		42.5	37.0	
9.4	41	4.3	55.6	9.4		43.9	8.7	9.0		44.4	32.2	9.5		27.0	5.5	9.5		55.9	22.0	
9.3		8.2	49.1	9.5		44.0	3.2	B 9.0		50.6	26.7	9.2		27.7	24.4	9.5		59.2	18.3	B
9.3		11.0	8.7	9.5		51.6	0.2	9.1		57.6	26.2	K 9.0		38.0	35.4	9.5	10	2.2	40.2	
9.5		13.3	58.3	9.3		51.6	3.2	B 9.3	56	38.9	28.5	7.0		44.1	55.8	K 9.4		7.2	34.5	B
9.1		17.4	36.5	R 9.4	48	3.9	39.7	9.2		40.2	27.3	B 9.5		51.8	24.5	9.5		7.5	29.5	
9.5		20.0	30.9	9.5		14.2	52.2	8.9		43.9	8.6	9.5		55.0	12.8	9.4		8.4	59.8	
9.5		23.0	58.3	9.4		17.5	5.0	8.9		56.1	37.8	B 9.2	3	6.9	9.5	9.5		9.2	7.1	
9.4		41.1	51.8	9.5		18.4	45.0	9.3		57.0	56.2	9.5		18.0	19.6	9.5		20.8	35.8	
9.4		50.0	7.3	8.3		28.1	58.1	9.4	57	6.6	36.0	9.2		28.6	31.0	9.5		28.0	54.7	
8.8		51.9	23.7	9.5		41.0	14.1	9.5		7.5	29.9	9.5		36.5	45.9	8.5		36.9	31.0	K
9.5		57.5	30.4	9.4		41.3	33.6	9.4		10.9	48.1	9.1		39.3	6.9	8.3		38.6	37.9	K
9.5	42	5.8	55.3	9.5		55.4	30.7	9.5		11.0	59.4	9.5		45.4	50.0	9.5		40.1	46.2	
8.3		7.7	37.4	K 9.5		56.2	19.5	9.4		11.0	52.6	9.4		55.4	46.2	8.6		47.3	3.6	L
8.5		15.0	7.2	K 9.4	49	32.1	54.0	B 9.4		12.8	37.9	B 8.5	4	22.9	6.2	K 9.5	11	7.8	4.2	
9.0		19.6	18.6	9.4		32.4	56.4	9.5		25.9	16.1	9.1		27.8	25.6	9.1		8.4	28.6	R
8.9		25.0	21.3	K 9.4		36.8	49.5	9.5		36.7	19.1	9.1		31.3	31.5	9.5		29.4	50.0	
8.6		32.7	6.2	K 9.4		47.2	6.4	9.5		47.1	45.4	9.5		48.7	11.0	9.4		32.3	6.6	B
9.2		44.9	33.4	9.5	50	3.8	49.2	9.3		47.5	43.9	B 9.5		49.1	27.2	9.5		39.7	5.6	
9.1		47.3	39.1	8.8		5.0	43.3	K 9.5		48.6	26.4	9.5		50.5	29.9	8.8		40.3	35.6	
9.1	43	2.8	24.3	9.4		11.9	11.4	9.4	58	2.7	28.0	B 9.5		53.6	48.6	9.4		45.8	8.1	
9.4		4.7	47.0	8.5		16.2	39.6	K 9.0		4.8	6.9	9.5		53.6	53.4	9.5	12	16.7	43.0	B
9.4		12.8	12.3	9.5		23.4	47.2	8.7		5.3	44.1	K 9.5		54.2	6.1	9.5		28.3	18.3	
9.1		14.5	34.1	9.3		27.7	37.3	9.5		9.0	28.2	9.3	5	26.5	4.2	9.4		31.4	59.5	
9.5		16.0	22.7	9.0		35.5	9.0	B 9.5		10.3	55.8	8.8		29.8	12.7	K 9.5		34.7	56.5	
9.5		20.0	32.0	9.5		38.0	8.0	9.3		22.4	39.6	8.6		31.4	22.5	K 9.4		42.3	53.0	
8.3		45.0	38.8	9.5		39.2	37.0	9.5		33.9	14.9	8.8		35.2	43.0	9.5		43.4	55.1	
9.5		46.4	35.9	9.5		39.4	52.3	7.9		39.5	49.9	K 9.5		52.4	52.0	9.3		53.8	36.9	
9.3		48.7	5.0	9.4		46.7	39.1	9.5		44.1	7.5	9.2	6	0.2	37.5	9.5	13	7.1	11.6	
9.3	44	5.5	51.0	9.3		50.3	13.2	9.5		45.2	13.1	9.4		3.3	4.2	9.4		14.0	4.0	
8.5		11.3	44.7	K 9.5	51	18.4	57.4	9.4		50.3	33.5	9.5		6.4	48.2	9.5		23.0	11.5	
7.7		19.9	44.0	K 8.7		26.3	4.0	K 9.2		51.0	48.6	9.5		12.8	31.0	B 9.5		23.7	2.0	
9.1		22.8	23.4	9.2		34.7	54.6	K 9.0	59	0.4	12.0	9.5		13.5	24.7	9.0		43.7	57.2	
9.2		23.6	56.5	K 8.9		41.3	2.5	K 9.3		21.5	39.9	9.5		18.0	34.9	9.3	14	1.5	6.2	
9.2		27.7	16.3	R 9.3		43.2	53.4	9.5		33.8	47.8	9.5		20.5	20.7	8.8		10.4	31.0	
9.4		29.6	46.0	9.5		54.4	35.0	9.4		45.9	10.0	9.3		26.1	57.7	9.1		10.8	5.1	
9.4		30.6	42.0	B 9.5	52	6.0	53.7	9.3		50.1	11.6	9.5		36.7	15.8	9.3		17.1	20.0	
9.2		34.0	12.8	R 9.3		6.6	40.6	9.5		58.0	27.5	9.4		38.7	32.7	9.2		23.4	39.0	
7.2		42.3	15.8	K 9.0		27.0	13.4	9.0	0	0.5	26.5	9.5		58.0	9.6	9.5		24.3	4.6	
9.5		52.0	29.6	9.4		34.9	46.5	9.5		11.8	34.5	8.8	7	20.6	33.0	9.0		39.2	4.3	
9.0	45	18.8	50.0	8.7		37.1	24.8	K 9.5		23.2	39.1	9.5		31.2	6.9	B 9.5		42.5	5.2	
9.1		35.7	49.5	9.5		44.4	3.3	9.5		35.0	27.8	9.2		37.3	32.1	8.8		50.8	27.8	
9.2		40.9	46.0	9.5	53	4.0	45.5	9.3		38.4	54.3	9.5		38.2	40.8	9.5	15	2.3	16.2	B

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	7u—8u	+20°			8u	+20°			8u	+20°			8u	+20°			8u—9u	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m′	′ ″	′	
9.5	58 1.4	6.7		9.5	11 59.6	42.5		9.3	27 18.2	51.1		9.5	33 8.6	27.5		9.0	47 19.9	33.1	K
9.5	32.5	43.2		9.5	12 18.1	31.5	B	8.7	20.7	49.0	L	8.7	15.6	10.3	K	9.5	23.2	4.9	
7.8	59 1.9	13.6	L	9.3	35.4	12.2	K	8.2	24.2	16.0	B	9.3	22.7	10.4	W	var	48 22.6	23.5	K
9.5	38.8	44.0		9.4	13 19.9	56.4		9.5	51.9	54.0		9.5	24.1	44.4		8.0	38.3	44.1	K
9.1	41.5	58.4	K	9.5	32.7	38.8		8.1	56.3	50.7	K	7.5	29.7	23.2	K	9.5	48.9	5.2	
9.5	57.9	32.8		7.5	40.8	25.6	L	9.5	57.5	40.0		8.9	33.4	40.6	W	9.2	49 0.4	26.5	K
9.5	0 13.1	42.9		9.5	48.3	6.2		9.5	28 25.5	15.5		9.5	36.7	8.8		9.3	25.2	7.6	K
8.7	14.7	11.2	L	9.5	14 6.5	22.1		9.2	41.3	5.8		9.5	45.8	6.8	B	9.1	33.5	2.8	K
9.5	20.5	42.2		9.4	27.9	2.1		8.0	29 3.4	59.3	L	9.2	58.7	33.1		9.1	50 22.4	44.4	
9.5	32.7	56.2		8.8	38.5	28.5		9.1	8.3	4.3		9.5	58.9	14.7		9.1	34.4	21.8	
9.4	52.7	48.4	B	9.5	47.0	24.0		8.8	10.8	31.3	W	9.0	34 0.0	41.3	K	9.5	49.3	8.3	
9.0	53.9	31.8	K	8.9	56.0	15.3		8.2	16.3	14.7	K	9.4	22.3	2.9		9.4	51 8.4	40.5	
9.5	2 15.9	40.4		9.5	15 37.4	21.4		8.4	20.9	2.4	K	9.4	26.4	6.2		9.5	21.1	39.2	
9.5	3 13.0	43.9		9.5	53.2	54.7		9.2	41.7	38.0		9.5	44.1	6.3		9.5	52 26.9	59.1	
9.5	16.8	56.6		9.5	16 14.1	59.3		9.5	52.8	3.5		9.4	52.5	53.4		9.5	53 2.5	51.5	
9.4	25.0	23.9		9.2	17.4	10.4	K	8.0	30 0.9	43.2	L	9.5	35 15.7	42.8		9.3	39.0	54.4	K
9.5	46.1	7.6		9.5	17.9	47.3		9.1	13.6	21.7		9.5	31.6	12.9		9.5	50.4	20.9	
9.5	4 0.7	7.2		8.9	24.3	36.5	B	8.4	18.3	29.7	K	9.5	46.3	36.3		8.9	54 20.5	41.2	K
9.5	55.8	25.8		7.4	24.8	37.3	L	9.0	27.5	0.3	W	9.3	36 7.2	29.2	K	9.2	55 19.1	39.2	
8.2	57.9	42.5	K	9.5	17 11.7	25.1		8.9	41.7	13.5	K	9.3	8.0	44.4		8.2	27.1	39.2	L
8.6	5 38.3	6.5	K	9.2	27.4	4.1	K	8.5	43.2	31.0	L	9.5	17.6	13.9		9.5	49.3	19.5	
9.3	56.1	42.2	K	8.5	35.8	38.8	K	9.0	43.3	37.0	W	9.3	26.0	24.9	K	9.5	57 3.4	24.0	
9.5	6 17.3	7.3		9.5	46.0	35.6		8.0	46.1	11.2	K	9.3	27.1	13.9		9.5	48.9	42.9	
9.5	17.5	46.7		9.2	18 5.9	14.6	K	8.8	49.4	5.9	B	9.5	44.5	51.5		9.5	58 8.0	2.7	
9.2	26.9	43.5	K	9.5	6.7	53.1		9.1	58.2	33.4	W	9.3	37 5.1	21.5	K	7.8	15.9	42.5	L
9.2	45.6	3.5	K	9.1	30.8	59.6		9.5	31 10.9	34.5		8.8	8.4	55.0	K	9.3	28.3	54.2	
9.5	53.2	8.1		9.4	31.1	35.3		9.0	12.0	41.3	W	8.0	30.2	33.7	L	9.4	40.4	49.7	
8.2	58.9	40.4	K	9.2	19 2.4	12.1		8.0	22.7	35.8	L	9.5	53.4	22.9		9.5	59 5.2	24.5	
9.5	7 25.0	43.0		9.5	34.7	4.7		8.0	22.7	17.5	K	8.4	56.2	13.2		9.4	18.2	26.0	
9.5	41.2	7.8		9.5	57.9	19.1	B	7.2	30.8	2.9	K	8.2	38 1.0	56.2	K	9.5	53.6	29.6	
9.4	46.1	2.1		9.5	59.0	3.5		9.4	33.8	34.2		9.5	19.9	6.3		9.5	0 6.6	39.2	
9.5	47.1	30.4		9.5	20 16.4	1.2		8.2	37.0	4.0	K	8.9	28.1	20.2	K	9.4	21.9	16.5	
9.5	54.1	9.0		9.5	20.1	44.1		8.2	37.9	2.7	K	8.7	29.5	50.2	L	8.9	37.4	12.9	
9.4	8 6.0	51.9		9.5	24.0	9.4		9.0	38.2	40.7	W	9.5	54.8	11.2		9.2	48.9	35.7	K
9.4	6.4	19.2	B	8.6	21 2.9	54.4	K	9.1	38.4	32.3	B	9.4	39 7.8	19.7	B	9.2	1 22.0	29.8	K
9.5	22.2	1.9		9.5	37.1	47.6		9.3	41.1	38.6	W	8.6	8.7	27.0	K	9.3	29.4	20.9	
9.5	28.0	19.2	B	9.5	22 34.0	2.8		9.5	44.7	14.1		9.2	17.9	19.4	B	9.4	42.4	11.0	
9.5	48.9	43.5		9.5	54.1	59.4		7.0	46.5	31.0	L	9.4	26.3	18.6		9.5	46.0	35.4	
9.2	9 24.2	45.3		9.4	23 4.4	22.2		7.3	50.4	28.7	L	9.0	53.5	12.0	K	9.4	46.8	16.8	
8.0	24.7	15.4		9.5	11.9	8.9		9.4	53.5	8.5		9.5	55.1	53.2		9.5	2 19.2	20.3	
9.3	27.9	8.8		9.5	25.3	22.0		9.0	54.8	30.3		9.5	40 17.6	9.6		9.5	3 14.5	58.7	
9.5	30.2	55.1		9.5	41.1	51.0		9.5	57.3	17.7		8.7	22.3	51.7	K	8.7	30.7	55.8	K
9.5	32.3	54.8	B	9.4	41.9	5.9		8.2	58.8	2.2	P	9.4	29.5	38.7		9.5	34.7	9.5	B
9.5	48.6	12.2		9.1	46.4	3.5	K	9.5	32 0.1	36.8		9.2	42 0.2	53.1	K	9.5	40.3	13.5	
8.5	10 6.4	4.0	K	9.5	52.9	8.8		8.5	0.7	11.7	W	9.5	22.6	47.4		9.3	48.6	4.0	B
9.5	14.7	7.2		9.2	59.4	3.4	K	7.3	1.8	10.5	P	9.3	39.9	54.3		9.4	51.6	6.0	
9.5	22.0	50.5		9.2	24 6.4	0.8		9.4	3.0	53.5		9.5	49.1	59.5		8.8	4 36.6	37.0	K
9.5	34.4	33.2		8.5	16.8	37.4		8.5	3.3	21.0	W	9.0	51.7	51.3	K	9.2	37.7	38.4	B
8.5	36.1	25.6	K	5.6	20.6	55.6	L	8.8	5.1	41.8	W	9.0	43 43.6	20.7	L	9.5	5 47.6	20.0	
9.5	50.4	16.3		9.5	52.6	50.2		9.1	6.3	11.7	B	9.5	44 14.1	30.1		9.5	6 6.3	7.4	
9.3	54.2	8.3		9.3	53.5	7.4	K	7.2	8.4	3.6	K	9.1	33.4	28.9		9.5	7 4.3	0.0	B
9.2	54.6	48.9		9.1	58.7	51.8	K	7.1	24.3	13.5	K	7.2	45 38.2	31.0	L	9.5	39.1	9.2	
9.5	11 15.1	13.5		9.2	25 1.5	57.2	B	8.7	31.1	46.6	B	8.5	42.1	46.3		8.5	49.9	40.5	R
9.5	17.8	37.9		9.5	20.6	46.5		9.0	37.2	27.0	W	8.5	57.3	7.7	L	9.1	53.1	26.8	R
8.5	20.9	46.3		9.5	54.8	2.4		7.7	37.5	5.4	K	9.2	58.9	26.2		9.5	8 1.9	1.5	B
9.1	22.4	53.2		9.5	26 1.6	17.1		9.5	48.8	1.0		9.2	46 25.2	23.1	K	9.5	13.7	1.5	B
8.0	36.4	18.3	K	9.2	40.1	0.4	K	9.0	50.1	20.4	W	9.1	53.1	24.8	K	9.5	22.4	14.1	
9.5	38.4	7.6		7.7	59.9	4.6	K	7.0	53.0	59.0	L	9.1	47 6.2	13.8		9.5	44.2	34.4	
9.4	39.9	19.4		9.5	27 7.1	42.0		8.6	54.1	25.8	K	9.5	8.0	22.8		9.5	48.0	42.2	
9.5	47.5	45.6		9.5	9.0	7.3		9.5	33 7.0	2.7		9.5	10.0	5.9	B	9.2	9 25.3	30.9	K

9ʰ—11ʰ **+20°**

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	9ʰ	+20°			9ʰ	+20°			9ʰ—10ʰ	+20°			10ʰ	+20°			10ʰ—11ʰ	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	9 45.0	9.9		9.5	33 43.9	39.7		9.5	55 11.5	33.0		9.1	16 0.0	18.4	K	9.1	52 32.8	12.0	
8.9	10 30.6	1.7	K	9.5	49.0	12.5		9.4	30.9	32.8		9.5	4.3	24.9		9.2	53 29.2	43.8	B
9.4	12 57.9	48.1		9.5	52.4	35.5		9.0	40.6	57.5		9.5	17 19.0	21.1		9.2	31.1	11.0	K
9.5	13 10.1	58.6		9.3	34 4.3	59.8		9.4	53.8	51.3		8.7	18 10.2	7.7	K	9.2	41.1	48.6	
8.6	11.6	4.0		9.3	27.5	37.5	B	9.5	56 26.4	22.5		9.5	30.6	14.2		9.5	44.4	53.5	
9.1	16.9	18.5	K	6.5	35 15.3	51.1	K	9.5	50.2	14.9		8.5	59.7	14.6	K	8.0	54 13.7	17.5	K
9.5	23.9	17.5		9.5	18.6	31.2		9.5	54.9	10.5		6.8	19 7.4	6.2	K	4.3	37.0	57.1	L
9.4	14 13.9	53.5		9.5	39.4	18.0		9.5	57 7.9	40.0		8.6	17.3	33.5	K	9.4	55 12.3	0.5	
9.4	17.5	10.0		9.5	36 17.4	3.6		8.0	8.9	36.9	K	8.6	48.1	52.3	K	9.5	13.8	7.6	
9.3	21.3	10.4	B	9.1	22.5	19.4		7.7	11.2	7.8	K	9.4	20 2.3	25.6		9.5	24.8	46.3	
9.4	40.0	7.7	R	9.5	22.7	26.3		9.0	58 2.4	9.1	K	9.4	3.3	34.2	S	9.5	46.0	34.5	
9.5	15 14.6	1.7		9.3	41.4	19.4		9.4	38.2	50.7	B	9.5	21 4.3	19.4		9.0	52.3	21.8	K
9.2	23.4	30.2		9.5	37 6.4	29.3		9.3	59 28.9	18.0		9.0	23.3	18.7	K	9.0	55.1	42.8	K
7.4	36.3	59.1	K	9.4	10.5	5.7		9.3	29.9	29.4		9.5	35.9	58.8		9.5	56 25.6	8.1	
8.4	55.4	5.3	L	9.5	24.9	49.6		9.0	41.0	30.0		9.5	59.5	53.6		9.5	56.3	13.5	
9.5	57.7	34.7		9.4	29.9	58.3	B	9.5	0 1.9	5.0		9.5	22 34.0	11.5		9.5	57 4.1	40.2	
9.0	16 1.5	29.2	K	9.3	38 28.0	22.5		9.1	19.9	42.4	K	9.5	24 38.3	3.4		9.4	27.0	39.6	
6.3	34.9	25.0	K	9.5	39 16.1	4.6	B	9.5	1 58.4	50.0		9.0	57.6	44.9	K	8.8	32.2	55.5	
9.5	17 22.4	27.8		9.4	51.8	43.0	B	9.5	2 10.6	10.3		9.5	25 12.3	26.7		8.8	59 8.8	4.4	
8.9	28.7	59.3		9.5	41 6.4	23.9		9.4	3 1.0	54.7		8.5	13.5	19.1	K	8.8	12.3	30.1	B
9.5	18 21.2	9.2	B	9.5	16.6	10.8		9.4	12.4	20.8		9.5	26 17.8	51.1		9.1	0 28.8	43.1	K
9.3	25.3	56.7		9.0	49.2	28.0		9.5	15.9	15.0	B	9.5	36.3	41.2		9.0	1 8.8	35.2	K
8.8	19 45.9	26.5	K	8.6	54.9	15.9	R	9.5	17.4	25.6		9.1	27 37.6	14.6	K	9.5	43.9	55.5	
9.5	21 7.9	11.7		9.5	42 46.3	56.4		9.4	18.4	28.9	B	9.3	53.0	36.3		9.5	2 42.8	16.5	
8.7	20.4	46.0	K	9.5	43 20.4	25.9		9.5	52.8	0.6	B	9.5	28 12.6	53.2		9.5	3 14.7	11.0	
9.0	50.8	5.4	K	9.5	35.1	53.0		9.5	59.7	6.1		9.1	13.4	14.9	K	9.5	51.9	19.7	
9.5	22 55.2	27.6		8.0	44.9	49.7	K	7.7	4 2.9	49.4	K	8.2	29 57.3	43.2	K	9.4	4 7.3	35.6	
9.2	55.6	5.4	K	9.5	44 25.9	40.0		9.3	8.0	56.0		9.5	30 8.9	54.0	B	9.2	37.3	32.1	K
9.5	56.2	23.2		9.5	34.0	12.5		9.1	25.9	35.2		7.9	41.6	22.5	K	9.3	55.5	54.1	K
9.2	59.9	38.9	K	9.5	45 6.6	56.7	B	9.5	33.1	24.4	B	9.3	32 7.3	45.9		9.1	5 34.7	46.9	B
7.2	23 25.3	54.3		7.4	11.5	38.2	K	9.5	5 27.4	3.6		9.5	12.6	6.3		9.5	6 2.3	6.4	
7.5	33.4	38.3	K	9.5	26.4	17.3		9.5	49.3	40.9		9.4	33 32.3	53.2		7.5	5.4	56.0	K
9.2	41.4	37.3	K	9.0	49.5	16.0	K	9.5	6 5.7	56.9	B	9.5	35 58.8	9.6	B	7.7	43.8	49.3	K
8.2	51.8	41.4	K	9.4	46 1.7	24.9		9.5	58.4	18.0		6.8	36 26.3	30.8	L	9.2	7 5.6	8.3	
8.4	24 31.9	29.8	K	9.5	53.8	33.1		9.2	7 31.7	50.9	B	9.4	30.9	52.5		9.1	17.8	43.2	
9.5	42.3	28.0		9.1	47 46.3	14.5	K	9.3	48.4	32.8		9.4	51.2	10.9	B	9.3	50.0	16.2	
9.5	25 11.9	30.2		9.5	48 6.1	42.7		9.2	8 47.4	36.5	K	9.5	37 19.3	22.2		8.6	57.3	24.6	K
9.5	39.0	11.0		9.3	40.9	16.0	K	9.3	9 0.0	6.8		9.3	49.0	56.3		9.5	9 1.9	37.6	
9.1	42.3	57.9	K	7.5	49 2.5	26.9	K	9.5	9.2	16.3		9.2	38 4.3	14.2	K	9.3	27.4	52.7	
7.0	27 52.7	41.4	K	9.0	3.0	26.2	K	8.2	47.7	43.1	K	9.1	41 9.6	33.5	K	8.8	46.6	47.3	K
9.5	28 0.8	10.6		9.3	17.0	55.2		9.1	10 16.9	26.3	K	9.3	21.8	8.5		9.1	10 39.7	52.0	K
9.1	13.1	4.6		9.0	19.8	17.7	K	9.5	35.1	56.4		9.2	44.7	45.8	K	9.5	11 15.3	4.4	
9.3	50.4	14.3	K	9.5	27.1	17.2	B	9.5	11 23.0	54.9		9.5	42 56.3	13.5		9.5	40 3	21.8	
9.4	59.2	58.9		9.5	27.7	0.1	B	9.5	37.9	37.4		9.5	43 7.8	20.7		9.2	12 13.4	53.8	K
9.3	29 34.6	53.6		9.5	30.4	23.8		9.2	44.3	35.8	B	9.5	44 47.0	5.4		9.2	56.2	14.8	B
9.4	35.2	3.2		8.8	35.9	15.9	K	5.9	50.6	12.7	K	9.0	48.7	55.8	K	9.0	13 0.4	15.2	K
9.3	30 27.9	3.5		8.4	40.5	52.3	K	2.0	57.9	35.0	K	9.2	46 8.8	36.8	K	8.8	6.3	4.4	K
9.5	33.4	58.8	B	9.0	45 0	10.1	K	9.3	12 9.7	8.7		9.3	47 11.3	14.2		9.3	13.8	43.0	
9.5	36.4	31.1		9.4	50 4.9	2.2		9.5	48.7	47.2		9.1	13.1	43.5	K	9.4	14 3.3	15.5	
9.5	39.6	5.5		9.3	16.1	37.3		8.5	52.2	15.3	K	9.5	52.4	30.4		9.3	6.3	7.2	
6.5	45.4	57.1	K	9.5	52.2	3.8		9.5	13 14.5	58.5		9 0	53.1	47.3	K	9.0	16.9	15.5	K
9.5	31 20.9	57.2		9.5	51 10.0	35.9		9.5	48.6	50.9		8.6	48 20.8	29.9	B	9.5	58.3	56.6	
9.4	24.9	19.0		9.5	43.0	43.4		9.5	57.0	37.3		9.0	28.3	49.3	K	9.2	15 20.4	55.5	
9.5	40.4	55.2	B	9 5	55.9	48.6		9.0	58.3	31.8	K	9.5	48.2	15.7	B	9.1	40.7	43.4	K
9.5	41.6	0.9		9.0	52 51.0	39.3	K	9.0	59.0	47.3	K	9.5	51.5	58.8		9.2	44.8	16.3	
9.3	32 17.0	14.9		9.1	56.4	33.5	K	9.5	15 22.7	30.8		9.5	49 2.3	9.0		9.5	16 32.2	32.5	
9.5	36.8	28.6		9.1	53 24.5	2.9	K	9.4	24.0	26.0		9.5	50 27.3	22.1		9.4	51.3	38.3	
9.5	33 18.2	13.9		8.9	41.7	11.8	K	9.5	44.0	2.1		6.8	53.2	24.5	K	9.1	57.3	23.8	
9.5	18.7	8.0		9.5	59.7	4.7	B	9.5	45.9	11.1		9.5	51 24.5	32.4		8.7	17 4.6	26.9	K
9.5	20.6	2.0		9.5	54 7.4	15.3		9.5	50.3	20.8		9.0	52 4.8	32.1		8.2	36.0	16.8	B

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	11ʰ	+20°			11ʰ–12ʰ	+20°			12ʰ	+20°			12ʰ–13ʰ	+20°			13ʰ	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.2	18 5.3	48.0	K	7.8	50 6.2	47.7	K	9.2	19 59.8	53.3		9.0	51 46.4	21.0	R	9.5	24 18.6	19.0	B
9.5	18.1	22.7		9.0	51 57.7	21.9	B	9.0	20 16.6	9.4		9.5	52 13.5	46.8		9.5	34 4	16.4	B
9.4	19 29.8	30.3		9.5	52 34.0	1.6		9.5	57.9	24.6		9.5	19.1	32.0		9.0	54.2	27.7	
9.5	20 7.5	16.9	B	6.9	40.6	13.9	L	9.4	21 9.7	52.7		8.3	53 21.9	26.3	K	9.3	26 17.9	59.8	
9.5	14.3	18.4		9.3	53 31.2	43.4		8.0	29.0	45.4	K	9.5	55 2.4	47.8		9.5	52.0	23.5	
9.5	16.0	13.9		9.3	54 24.9	42.5		9.2	29.6	1.9		9.1	55.0	42.3	K	9.1	28 3.4	9.2	
7.5	37.1	52.9	K	9.1	26.9	31.9	K	8.7	22 7.0	6.2	K	9.5	56 54.9	12.8		9.5	59.7	22.5	
8.8	21 19.0	44.5	K	9.2	50.7	13.8	B	8.7	50.6	9.4	K	9.1	57 5.7	11.1	K	8.5	29 22.5	45.1	K
9.5	48.0	47.0	B	9.4	53.6	22.8		9.4	23 35.4	42.3		9.2	10.8	56.9	K	9.0	30 4.8	35.0	
9.3	22 25.3	20.4	K	8.6	57.5	5.5	K	8.5	25 1.5	48.1	K	9.4	24.4	25.2		9.4	44.2	37.1	
9.5	33.4	56.0		9.0	55 0.0	55.8	K	9.4	53.1	3.6		9.1	30.0	8.2		9.4	31 6.7	37.5	B
9.2	53.1	37.7	K	9.3	47.2	27.5		9.5	26 9.2	26.1		9.3	59 0.3	52.9		9.3	28.5	57.5	
9.4	23 27.5	16.4		9.3	59.7	49.6		9.1	20.6	54.6	K	9.5	29.4	45.8		9.5	40.2	20.4	
9.5	59.5	15.8		9.4	56 0.7	42.6	B	9.5	58.3	6.5		9.5	45.0	14.8		9.2	46.0	10.8	
9.5	24 54.4	52.1		9.2	18.9	13.3		9.0	27 6.6	3.0		9.5	0 18.6	0.8		9.5	52.7	59.3	
8.4	25 28.4	20.3	L	8.3	24.6	11.8	R	8.9	6.7	24.0		8.0	49.9	42.3	K	9.5	32 21.2	7.3	
9.3	36.1	18.8	B	9.5	30.5	11.3		8.5	22.6	12.9		9.0	51.6	27.4		9.3	32.8	36.5	
7.5	57.0	29.6	L	8.8	57 44.3	21.8	K	9.4	35.9	34.7		8.9	1 10.2	53.8	K	5.5	33 44.7	41.3	K
8.8	26 9.0	21.0		9.0	47.0	27.0	K	9.4	28 11.8	28.5		8.9	53.1	49.9	K	7.5	45.5	44.9	B
9.3	27 9.8	54.7	K	9.3	58 30.0	15.2		9.0	29 22.5	25.9		9.1	59.7	22.6	B	9.5	34 7.5	19.6	
8.8	32.1	23.7		9.5	59 21.3	22.9		9.2	26.9	14.3	B	9.5	2 22.6	4.3		9.1	27.7	27.6	K
8.6	28 15.7	54.8	K	9.3	42.9	24.0		9.5	34.4	58.0	B	7.8	38.0	54.4	B	9.5	40.4	36.0	
9.2	18.8	56.7		7.8	58.9	10.1	K	9.3	41.1	17.0	B	9.3	59.3	13.1		9.3	45.5	27.1	
9.5	28.9	10.0		9.5	0 0.9	52.4		9.3	55.4	56.8		9.5	4 8.9	55.2		9.1	36 18.7	41.7	B
9.3	29 16.6	14.3	B	9.4	27.6	27.0	B	9.5	30 13.3	25.3		9.0	22.6	36.7	K	8.3	26.4	56.9	K
9.0	18.8	21.3		8.8	34.6	19.1	K	8.8	15.6	46.8		8.3	30.5	35.3	K	9.5	43.5	28.1	
9.2	30 8.0	50.4	K	9.4	1 41.7	24.0		9.4	31 39.1	55.6		9.5	32.9	19.4		9.5	38 32.0	19.5	
8.5	25.6	7.9		9.4	2 19.1	16.8	B	8.3	32 8.0	49.8	B	9.2	5 17.4	36.7	B	9.5	33.1	26.1	
8.8	26.6	28.3		8.9	52.0	56.7	K	9.5	9.9	5.5		7.5	49.9	41.6	K	9.5	39 1.4	46.7	
9.3	32.1	57.6	B	9.4	57.1	18.6		9.5	19.5	10.6		9.0	56.9	34.7		9.1	40 6.4	11.6	
8.0	55.5	54.6	K	9.4	3 34.7	4.4		8.6	21.8	43.7		9.4	6 41.5	29.6	B	8.8	22.8	51.9	K
8.7	31 35.7	16.8	K	9.4	43.2	24.3		9.0	40.9	23.0		9.4	8 31.2	54.8		8.4	44.6	1.9	R
9.5	32 4.1	13.7		7.5	5 2.6	37.7	R	8.5	33 11.8	33.5	K	8.5	9 27.5	52.0	K	9.5	41 28.5	19.2	
9.5	18.7	0.5		9.4	11.1	6.2		9.3	34 21.9	14.8	B	6.8	30.3	33.0	L	9.1	42 18.0	54.5	
9.5	34.6	38.7	B	9.2	6 2.3	9 9		8.5	22.3	39.9	K	8.0	42.9	35.4	P	9.0	30.6	40.7	
9.0	39.9	55.5	K	9.3	48.2	15.7		9.5	35 30.2	2.5	B	8.3	10 0.4	3.9	B	8.0	39.8	5.1	K
9.0	40.8	20.0		9.3	48.6	22.9		9.5	37 51.1	32.4		9.5	27.4	26.0		8.8	42.8	59.7	
9.5	33 21.5	55.8		8.7	7 32.3	2.8		9.5	38 46.0	21.5		9.5	45.5	48.3		8.2	56.0	4.6	K
9.3	35.0	4.5		8.6	32.8	35.4		9.0	39 41.2	25.4		9.4	35.8	7.5	B	9.1	43 9.4	9.5	
9.0	34 0.8	33.8		9.4	8 10.1	13.6		9.0	42.1	12.5		9.3	12 16.1	8.7		9.4	28.0	36.6	
8.5	2.7	19.9	K	9.5	34.6	43.5	B	7.5	41 5.6	6.7	P	9.0	28.8	45.4	B	9.3	33.2	32.0	
9.5	36 8.4	4.2		9.4	10 5.7	38.5		9.2	45.9	59.5		9.3	29.6	1.4		9.0	56.5	53.5	
9.5	41.2	48.0		8.8	11 28.1	47.5	K	8.7	47.9	29.5	K	9.5	54.0	9.2		9.5	44 5.9	55.6	
8.0	37 31.9	18.7	K	9.5	59.6	12.2	B	9.0	52.3	28.4	K	9.0	13 25.3	27.0		9.3	6.1	43.4	
7.5	50.7	43.1	K	9.4	12 24.5	11.9	B	9.2	42 8.1	18 8		9.5	34.2	53.6		9.0	44.5	53.5	K
9.4	38 43.2	57.2	B	9.5	33.6	28.8		9.3	56.2	39.7	B	9.5	43.8	36.0		9.4	52.5	8.1	
9.0	39 12.6	44.5		9.5	13 4.0	57.7		9.5	44 26.8	34.0		9.5	14 24.1	0.0		9.3	56.5	54.4	
7.5	42.9	7.0	K	8.4	18.6	53.1	K	8.3	34.6	2.0	K	9.0	40.3	28.1		9.2	45 33.1	56.0	
9.5	54.2	35.9		9.1	35.3	8.0		8.3	50.7	57.0	K	9.5	15 14.2	26.4		9.3	46 12.6	24.7	
7.8	58.8	49.8	K	9.4	45.3	54.1	B	9.2	45 35.6	46.1	K	9.0	16 4.5	1.9	K	9.2	20.5	53.0	
9.0	40 0.1	51.5	K	9.3	14 9.0	42.6		7.8	55.8	25.0	K	9.0	51.7	53.8	K	9.5	51.5	52.9	
9.0	56.6	10.5		9.3	22.7	38.1	B	6.5	46 23.9	17.0	K	9.5	17 18.8	54.5		9.5	53.8	30.7	
9.3	41 14.6	23.6		8.0	15 23.6	57.4	K	7.0	47 56.9	24.9	K	9.4	52.1	48.1		9.0	47 1.7	13.1	K
9.0	53.9	36.5		9.5	46.0	6.8		8.8	48 8.8	53.2		9.5	18 33.6	39.9		9.0	17.5	52.8	
9.4	43 37.6	33.6	B	8.0	16 2.0	28.1	K	8.7	10.4	33.4	K	8.8	20 29.0	48.3	K	9.2	53.6	50.9	K
9.5	46 0.2	23 0		9.5	7.6	58.1		8.5	20.5	44.1	K	9.5	21 26.2	34.8		9.5	48 17.9	29.6	
9.5	50.5	2.3	B	9.3	14.8	11.1		9.5	35.0	16.3		7.8	56.0	32.6	K	8.3	29.5	5.9	K
8.2	47 9.3	12.6	K	9.2	17 1.0	6.7		9.4	58.3	58.1	B	9.0	22 47.5	56.6	K	9.3	47.3	38.0	
8.2	12.7	13.9	K	9.5	52.6	45.8	B	8.6	49 13.4	54.1	K	9.2	23 7.4	4.4		9.5	49 13.9	12.5	
9.3	48 2.4	51.3		9.3	18 36.2	32.0		9.5	50 7.0	14.3		9.5	14.6	6.5		9.3	42.9	54.2	

2901—2960					2961—3020					3021—3080					3081—3140					3141—3200				
	13ᵘ—14ᵘ		+20°			14ᵘ		+20°			14ᵘ—15ᵘ		+20°			15ᵘ		+20°			15ᵘ		+20°	
m		′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.2	50	23.0		4.8		9.1	12	48.5	13.1	K	9.3	39	24.8	11.4		9.3	6	22.0	26.5		9.3	36	55.9	6.3	K
9.5		33.8		48.3		8.7	13	0.8	10.1	K	9.5		28.0	59.6		8.3		24.9	51.9	K	9.5	37	52.4	2.6	
9.5	51	10.7		48.2		9.3		22.9	22.2		9.5	40	16.3	4.7		8.8	7	45.4	30.4	K	9.0	39	0.3	36.7	K
8.9		14.5		9.5		9.5		47.0	50.9		7.5		20.0	24.6	B	9.4		57.2	16.7	B	9.0		26.5	2.6	K
9.0		39.0		19.1		9.4		49.1	16.3		8.0	42	27.5	18.0	K	9.3	8	12.0	22.7		7.8		59.0	22.5	K
9.5		55.5		8.0		7.5	14	16.6	25.2	L	6.9		50.0	7.2	K	9.5	9	24.6	58.7		9.3	40	12.4	18.7	
8.4	52	56.1		35.5	K	9.4		50.4	18.6		9.5		56.6	27.6		9.5		49.3	40.1		9.5	41	5.1	12.5	
9.3	53	39.0		53.6		8.4		56.7	2.1	K	9.0	43	11.4	14.8	K	8.6	10	26.1	10.9	K	9.2		6.0	57.6	
9.5		56.4		2.0		9.3	15	13.7	23.7	K	9.5	44	32.2	34.8		9.4		29.4	42.1		9.4		6.9	30.3	B
9.0	54	3.1		51.1	K	8.0		16.5	28.3	K	9.5		39.4	18.6	B	9.1	11	49.5	31.4		9.5		18.6	53.2	
8.7	55	6.8		8.0	S	9.5		21.2	49.9		9.5	45	8.7	25.2		9.4		51.0	48.4		9.5		29.7	5.2	
9.5		26.0		11.5		9.4		23.2	55.4		7.3		31.2	53.6	K	9.4		57.7	26.1		9.5		56.1	6.2	
9.0		44.4		29.2		9.5	16	55.6	48.7		9.5		44.3	2.7		9.5		59.5	45.9		9.3	43	18.2	20.1	
8.8	56	34.1		34.5		9.5	17	27.4	20.4		8.8	46	45.9	19.3		9.5	13	3.2	40.3		8.0		33.1	8.7	K
9.3	57	1.8		23.0		8.1	18	14.6	10.0	K	9.5		50.5	16.6		9.4		51.4	59.4		7.7	44	6.4	47.7	K
9.2		45.9		5.5		9.5		43.9	6.9		7.5		55.5	29.0	K	9.3	14	31.1	52.4		9.5		28.8	18.0	
9.5	58	22.6		25.4		8.7	19	36.7	2.0	B	9.5	47	31.4	7.0		9.5		42.1	3.5		9.5		48.1	20.8	
9.1		41.6		6.7		9.0		43.5	21.9		9.5	48	19.0	20.3		9.4	15	14.9	41.8		9.2		58.2	6.3	
8.6	59	0.9		38.5	B	9.5	21	56.6	58.2		9.5	49	12.4	43.5		9.5		29.9	30.4		8.7	45	38.4	41.2	B
8.5		57.3		47.7	K	9.5	22	1.1	8.8		9.5		17.5	51.8		8.2	16	6.0	55.5	K	9.5		57.2	10.5	
9.0	0	15.5		52.9	K	9.0	23	9.7	13.4	K	9.1		26.1	16.6		9.3		56.6	24.5	K	9.5	46	6.6	25.7	
8.8		35.1		17.4		9.5		10.6	25.6		9.2		41.6	48.0		9.5	17	57.2	48.3		9.1		27.1	26.7	
9.5		38.9		50.1		9.2		36.8	3.6	K	9.0	50	9.6	16.2	K	9.1	18	5.8	27.2	K	8.9		28.7	49.0	
8.8		42.0		36.2		9.2	24	17.0	17.9		9.5		31.5	26.6		9.0		6.0	16.9	K	9.4	47	32.2	2.6	
9.5		47.1		5.4		9.5	26	4.7	5.2		9 5		43.6	24.8		9.5		15.1	59.4		9.4	48	1.1	30.4	
9.5		59.4		51.8		9.2		11.2	47.1	K	9.5	51	29.6	53.9		9.0		52.8	45.6	K	6.2		13.5	45.2	K
9.5	1	1.3		40.4		9.5	27	28.0	37.6		9.5	52	0.0	42.1		8.9		59.0	19.3	K	8.5	49	37.0	37.0	K
9.0		19.8		49.7		9.1		31.8	51.8	K	9.5		0.5	9.6		9.5	19	20.2	14.3		8.2		59.3	50.9	K
9.5		20.7		33.2		9.5	28	10.6	27.5		9.5		28.4	7.9		8.8	20	32.6	34.2		8.8	50	4.6	57.7	K
9.0		32.8		1.5	K	9.5		40.4	41.8		9.5		46.1	14.8		9.5		58.1	22.9		9.5		29.2	12.9	
9.2		48.0		54.8		9.5	29	21.0	28.7		8.3		53.0	56.8	K	8.7	21	0.7	58.8	K	9.4		32.9	5.8	
8.3	2	5.3		9.4	K	9.1		32.6	2.9	K	9.4	56	44.4	41.4		8.7		44.1	34.2	K	8.2		34.0	27.4	K
8.2		58.1		25.0	K	9.2		59.9	51.5	K	9.0		50.4	48.6	K	9.0	22	49.0	54.3		9.2		55.6	45.6	K
8.3	3	23.2		2.7	K	9.3	30	4.2	18.3	B	9.1	57	10.5	39.8	K	9.5	23	5.3	5.3	B	9.0	51	34.9	28.0	K
9.5		31.0		44.0		9.5		6.6	36.3		9.5		10.9	12.0		8.5		49.8	9.6	K	9.5	52	21.0	17.8	
9.4		40.4		27.5		8.5		44.0	26.2	L	7.5		53.7	25.5	K	9.5	24	17.1	44.3		9.5		25.8	20.8	B
9.5		47.2		52.7		8.2		46.9	29.0	K	8.0	59	7.3	57.2	K	7.3	25	16.6	53.3	K	8.8		27.0	57.2	K
9.5		51.0		2.6		8.7		51.0	2.0		9.4		16.1	38.0		7.5	26	18.8	13.2	K	9.5		27.6	7.2	
9.2	4	50.1		51.3		9.5	31	33.9	46.0		9.0		22.7	45.2	K	8.7	27	12.6	28.9	K	9.3	53	1.1	40.1	
9.0	5	0.7		59.9		8.2		47.4	29.0	L	9.5		43.1	10.8		9.3		18.1	58.9		8.9		36.4	35.3	K
9.0		18.4		2.9	R	9.4		51.5	48.9	B	9.4	0	8.5	8.7		8.2	28	24.6	15.5	K	9.3		44.0	19.8	
8.5		23.9		29.2	K	9.5	32	35.0	20.0		9.5		8.9	48.6		9.5		47.4	41.8		9.5	54	22.6	24.3	
9.1	6	4.6		44.2		9.5		47.4	5.6		8.8		27.5	54.4	K	9.4		52.3	52.4		9.5		43.1	40.5	
8.5	7	0.6		42.5	L	9.3		49.5	3.4	B	8.5		44.3	25.2	K	9.5		53.5	48.4	B	9.5	55	16.6	36.0	
8.0		9.7		15.0	R	9.2	33	3.5	18.3	K	9.4		56.2	54.2		9.5	29	16.6	47.0		9.2		23.1	25.0	
9.5		27.4		38.6		9.0		17.9	11.6	K	9.5	1	18.3	13.1		9.4	30	1.2	9.8	K	9.1		23.9	13.5	
9.5		45.3		55.4		9.0		51.3	30.7		9.3		23.1	27.3		9.5		39.4	26.8		9.5		24.2	43.5	
9.5	8	12.5		19.6		9.5	34	42.2	23.0		8.7		43.2	4.3	K	9.4	31	0.0	14.2	B	9.4		50.3	26.7	
8.0		17.6		34.1	K	9.4	35	47.4	7.1		9.1		51.7	7.3	K	9.5		10.4	56.3		9.0		52.4	30.7	
9.5		23.2		33.4		9.1		56.1	6.5		9.5	2	45.3	10.3		9.5		42.9	39.4		9.0		56.6	56.9	
9.5		26.4		41.4		9.5	36	20.4	6.6		9.5	3	3.1	44.2		9.5	32	0.1	36.0		8.0	56	1.9	2.2	K
9.0	9	10.8		14.0		9.4		41.5	41.2		9.2		25.1	58.5	K	9.2		40.0	48 9		9.1		11.1	14.9	K
9.5		34.7		18.9		9.4		45.0	52.0		9.5		34.3	24.3		9.5	33	36.8	17.7		9.3		21.7	33.7	
7.0		49.1		48.0	K	9.4		47.6	40.7	B	9.5		38.0	20.0		9.5		54.6	25.0		8.7		29.9	10.6	K
9.5		59.5		10.3		9.0		56.8	43.8	K	8.6	4	4.5	54.6	K	9.5	34	12.1	30.1		8.5		59.4	36.6	K
9.5	11	40.2		9.0		9.5		59.9	31.0		7.2	5	1.1	36.6	K	8.9		36.6	47.7	K	9.5	57	25 9	3.2	
8.3	12	2.8		31.2		9.5	37	29.0	7.5		9.4		30.9	18.6		8.8	35	5.6	34.6	K	8.5	58	5.1	14.9	K
9.5		11.5		2.4		9.3	38	18.6	29.0		9.5		56.0	21.4		4.5		7.8	8.4	K	9.5		16.5	9.3	
9.5		13.4		42.5		9.0		29.7	44.8	K	9.0		59.6	16.8	B	9.3		13.3	47.8	B	8.8		18.6	13.9	K
9.5		15.3		36.0		8.5		42.9	46.6	K	8.8	6	17.9	20.4		8.0		46.3	39.4	K	9.5		23.5	55.8	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	15ᵘ—16ᵘ	+20°			16ᵘ	+20°			16ᵘ	+20°			16ᵘ—17ᵘ	+20°			17ᵘ	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	58 23.5	51.5		9.3	17 56.7	17.0		9.5	37 3.2	3.2		9.2	55 54.9	6.2	B	9.5	12 19.3	45.2	
9.5	52.4	55.6		9.3	18 10.0	41.9	B	9.4	14.4	26.3		7.4	56 24.6	56.3	L	9.5	26.4	58.3	
8.8	59 26.9	11.0		9.4	15.1	6.1		7.3	14.7	59.8	K	9.4	57 17.6	35.0		9.2	47.0	35.2	
8.7	30.6	40.5		9.1	19 8.7	4.3		8.3	19.4	58.1	K	9.5	17.9	40.8		9.5	59.4	0.0	
8.6	38.1	43.9		9.3	20 4.7	33.1		8.3	30.6	7.1	K	9.4	20.4	20.9	R	9.4	13 12.3	21.1	
9.0	42.2	14.3		9.5	41.0	27.4		9.4	58.8	55.6		8.6	33.1	1.3	K	9.2	26.4	26.3	
8.6	44.4	6.3	L	9.0	55.3	31.1		9.3	38 5.7	49.5	B	9.5	36.9	55.5		8.3	33.2	49.0	B
9.4	52.6	28.5		9.4	21 9.6	41.8		9.0	59.4	41.0		9.3	37.8	40.8	B	9.5	54.3	48.2	
9.5	58.6	33.8		9.2	22.6	40.8	K	9.3	40 0.2	19.6	K	8.2	58 2.2	15.2	B	9.2	14 8.9	25.5	
9.3	0 37.6	44.6		9.5	43.1	19.1		8.0	7.3	17.0	K	9.5	32.0	36.9		9.5	35.6	23.9	
8.7	1 4.7	59.3	K	9.5	22 0.7	10.8		9.0	21.9	29.4	B	9.5	59 24.4	25.9		9.2	35.6	13.6	
8.3	23.6	46.2	K	9.0	4.0	26.4		7.7	41 30.1	28.0	K	9.3	27.8	57.8		9.2	43.4	33.1	
9.5	45.6	14.2		9.0	7.5	48.1		8.6	53.8	25.6	K	8.8	49.9	8.2		9.5	15 0.3	5.0	
9.5	46.9	28.0		9.5	18.0	40.8		9.4	42 1.0	1.9		8.5	53.8	45.5	K	9.5	6.4	58.6	
9.5	2 1.8	52.7		9.5	21.0	58.0		9.0	8.1	29.9	K	9.5	56.2	12.8		9.5	18.6	43.6	
9.0	21.6	48.4		9.5	31.3	2.3	B	9.3	31.3	3.6		8.5	0 5.9	24.9	K	8.8	19.6	17.4	K
8.8	48.8	19.8		9.4	46.6	54.6		9.5	43 11.6	0.8		9.5	15.4	32.4		8.3	33.9	36.0	K
9.2	3 9.4	56.4		9.4	23 4.4	7.7		9.5	15.8	18.2		9.0	30.9	25.2	K	9.5	34.4	50.7	
9.5	27.6	52.8		9.5	28.2	24.9		9.5	32.5	23.3		9.5	46.3	35.2		9.2	39.9	47.7	
9.5	54.1	23.9		9.5	24 10.6	55.7		9.0	39.7	18.8	B	9.5	50.8	40.7		9.0	16 11.1	38.0	K
9.4	4 2.7	14.3	B	9.5	13.3	35.2		9.5	45 26.9	28.0		9.5	2 8.6	54.3	B	9.5	27.9	39.7	
9.5	41.8	39.6	B	9.1	14.0	27.5		6.8	28.7	49.4	K	8.8	10.1	32.5	K	9.5	48.1	3.6	
9.3	44.1	6.7		6.0	16.0	48.0	B	9.3	46 21.9	5.7	K	9.5	17.2	22.3		9.2	17 2.9	36.6	
9.5	46.1	37.1		8.6	21.2	14.2	K	9.5	47 52.6	2.3		9.3	31.1	52.2		9.0	9.1	13.2	
9.4	5 10.9	8.1		9.5	32.5	32.9		9.5	48 18.9	39.6		9.4	41.6	19.3	B	9.1	20.4	12.2	
9.5	16.6	53.2		9.5	25 0.9	27.8		9.1	20.1	14.1		9.5	51.2	47.7		9.5	36.0	25.5	
9.0	6 42.1	23.6		9.5	54.0	23.3		8.8	52.8	44.1	K	9.4	3 11.4	55.7	B	9.5	45.1	2.0	
9.1	7 39.5	1.7		9.2	27 1.1	46.7	K	9.5	49 9.6	0.8		9.5	19.6	2.6		9.2	18 5.9	2.7	K
9.5	45.6	16.0		9.5	24.8	43.8		9.3	10.2	42.5	K	9.5	27.4	7.0		9.1	16.9	4.6	
9.5	57.1	47.2		9.5	31.7	51.5		9.2	50 18.9	49.6		9.4	45.2	12.9	R	9.5	28.6	9.7	
9.5	8 19.1	15.0		9.5	53.5	30.2		9.5	39.8	37.3		8.8	4 4.6	25.9	K	8 3	59.6	3.4	K
9.5	50.9	57.7		9.5	28 3.0	24.4		9.3	42.5	26.0	B	9.5	25.9	45.6		9.5	19 0.4	31.0	
9.0	9 10.6	6.3		9.0	7.5	35.4	K	9.4	51 5.6	2.5		9.4	34.9	9.0		9.4	0.9	42.1	
8.2	43.2	51.1	K	9.4	29 41.2	1.2	B	9.4	7.1	22.7		9.5	5 4.3	28.7		8.8	7.2	9.3	K
9.4	10 17.8	1.5		9.4	52.7	4.7		9.1	8.4	7.4	K	9.5	30.4	29.4		8.2	19.8	28.3	K
8.3	27.7	9.8	K	9.4	30 2.7	3.7		9.5	9.1	25.5		9.3	33.4	33.8		9.5	41.6	17.3	
9.5	38.6	53.5		9.3	4.6	49.5	K	9.5	9.4	27.5		9.1	42.8	19.4	L	9.1	41.9	25.5	
9.3	11 11.6	2.5		9.2	16.1	43.4	K	8.8	23.3	11.9	K	9.1	46.4	52.4	K	9.1	43.1	23.5	
9.5	48.8	21.2		9.5	17.2	48.0		9.4	34.6	26.5		8.1	57.3	18.4	K	9.4	20 8.6	2.9	
8.1	55.4	38.5	B	9.5	57.1	48.0		9.4	35.5	30.3	B	9.3	6 7.4	22.2		9.0	33.3	21.4	K
9.5	12 17.7	57.0		9.1	31 1.0	22.3		9.4	41.2	31.1		9.3	7.9	13.3		5.7	33.9	13.2	K
9.5	54.0	31.7	B	9.4	12.6	10.6		9.0	50.3	53.5	K	8.8	22.5	59.2	K	9.5	21 17.8	17.3	
9.5	13 21.1	18.7		9.5	46.5	35.7	B	7.7	52 8.4	22.5	K	9.4	31.1	48.6		9.0	23.7	9.4	
7.9	24.4	10.5	K	9.5	52.0	48.4		9.5	24.2	3.8		9.5	41.8	1.6		9.4	25.1	2.5	
9.3	58.6	14.3		9.4	32 29.9	17.5	B	9.5	42.6	39.4		8.8	7 2.1	14.3	L	8.7	39.6	57.0	R
9.5	14 18.0	17.2	B	8.5	34.0	46.3	K	9.4	43.4	18.7		9.5	8.4	1.1		9.5	22 0.9	25.3	
9.4	23.0	31.5		9.5	44.3	25.2		9.1	49.9	13.6		8.5	14.3	43.2		9.5	7.8	48.9	
9.4	26.9	53.1		9.2	51.4	43.1	K	9.5	53 7.0	6.6		9.2	8 0.4	42.8		8.7	13.2	4.6	K
9.5	43.7	34.3	B	8.7	55.1	54.5	K	8 7	11.1	19.9	K	9.5	8.3	14.6		9.3	27.9	9.4	
8.3	57.1	25.9	K	9.5	33 21.1	4.4		8 8	25.6	3.4	K	9.5	12.4	13.3		9.5	44.4	52.7	
9.5	15 56.1	42.2		9.5	34 8.8	35.5		9.3	35.9	42.8		8.8	14.2	7.1	K	9.5	44.5	3.8	
9.4	16 31.7	10.5		9.5	53.9	2.1		9.5	43.1	13.9		9.1	9 16.8	17.0	R	9.5	23 18.1	56.2	
9.3	17 3.7	15.0		9.5	35 34.3	46.9		9.4	58.4	10.0		9.4	44.6	34.0	B	8.8	18.1	39.4	
9.5	5.6	29.7		9.5	35.5	57.2		9.2	54 6.3	1.6		9.5	10 2.5	30.5		9.5	24.0	7.9	
9.3	9.8	19.9	B	9.2	35.6	38.4		9.5	12.4	44.6		9.3	20.4	26.3	K	9.3	27.4	37.5	
9.4	20.2	13.8	B	8.7	39.9	14.3	K	9.3	17.9	14.9	B	9.3	24.7	0.4		9.2	34.9	38.3	
9.0	33.1	54.6		9.5	58.1	42.9		8.5	25.5	37.8		9.5	41.3	43.9		9.5	44.4	49.2	
8.5	38.1	37.7	K	9.4	36 31.4	8.4		9.5	48.6	10.2		8.1	4 1.6	29.4	K	9 5	24 14.2	59.9	
8.2	38.6	45.3	K	8.8	36.6	48.6	K	9.5	55.6	11.7	B	8.1	11 24.4	36.2	K	9.5	35.2	57.2	
9.1	51.4	37.6	B	9.2	58.8	21.7	K	9.5	55 22.4	28.6		9.5	59.6	57 3		8.0	55.0	18.0	L

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	17ᵃ	+20°			17ᵃ	+20°			17ᵃ—18ᵃ	+20°			18ᵃ	+20°			18ᵃ	+20°	
m				m				m				m				m			
9.5	25′ 10.8	22.2		9.4	39′ 25.1	56.9		8.7	52′ 35.7	27.0	K	9.0	4′ 7.9	18.1		8.5	14′ 15.8	51.5	K
9.1	14.1	8.2	K	9.5	40 4.9	50.3		9.5	56.6	4.0		9.5	16.6	53.2		9.1	31.7	50.4	B
9.3	40.3	54.2		9.3	28.1	55.5		9.5	58.9	11.3		9.4	17.4	33.2		9.5	35.9	17.8	
9.1	42.7	35.6	K	9.5	54.9	53.3		9.2	53 4.0	17.5	B	9.4	31.2	40.7		9.1	54.3	0.8	
9.5	49.9	13.9		9.1	41 23.0	13.5		9.2	5.0	18.8		8.5	33.7	37.7	B	7.5	55.3	52.2	K
9.2	26 1.4	34.6	K	9.1	29.0	34.6		8.5	6.5	29.2	K	9.3	43.0	57.2		9.5	57.4	14.6	
9.5	22.3	18.0		9.0	44.7	26.4		9.3	13.3	53.5		9.5	47.4	0.4		9.5	15 5.3	55.9	
9.1	27 10.1	25.3		9.1	48.4	58.1	R	9.5	15.1	10.0		9.5	56.9	47.9		9.5	7.0	26.3	
9.0	12.6	42 5		9.5	42 3.4	3.5		9.3	37.8	18.0		9.5	5 5.6	48.6		9.5	9.6	10.8	
9.3	22.9	55.8		5.8	11.5	37.0	B	9.5	41.9	3.0		9.1	12.5	54.5	K	9.1	23.5	26.4	
9.5	25.2	3.6		8.8	14.7	57.3		9.0	47.3	59.4	K	9.5	18.9	27.9		9.4	32.0	18.6	
9.5	28 3.1	22.2		9.5	25.6	56.2		9.0	49.8	54.8	K	9.3	24.7	20.5	K	9.5	45.5	9.2	B
9.5	3.9	47.6		9.4	28.2	26.7	B	7.8	55.3	45.9	K	9.5	31.8	30 6	B	8.5	46.1	35.7	R
9.1	13.3	27.3		9.0	53.1	11.9	B	9.2	54 2.8	55.5		9.5	44.6	39.3		9.3	16 8.7	42.8	
8.6	28.7	7.2		7.8	58.0	13.9	K	9.0	22.0	34.5		9.5	45.8	3.3		9.3	17.6	29.5	
9.5	32.4	12.9		9.5	43 6.7	57.7		9.3	55 0.6	43.5		9.3	6 16.0	43.5		8.9	36.4	12.5	
8.3	49.1	14.2	K	9.5	19.3	5.6		8.2	1.5	56.6	K	9.4	17.1	5.1		9.5	42.3	7.6	
9.5	49.8	51.3		7.2	23.2	41.3	R	9.3	6.3	56.1	B	9.3	36.5	56.8		9.5	42.8	9.6	
9.2	29 17.4	47.9		7.5	31.3	57.9	L	9.1	19.0	14.8	B	8.6	52.5	16.3	L	8.9	43.1	15.4	B
9.4	22.2	54.2		7.3	45.8	54.4	L	9.2	29.6	36.7		9.3	7 9.4	48.8	B	7.3	45.8	53.5	K
9.5	27.1	1.5	B	9.5	46.9	2.8		9.2	35.6	20.6		9.5	10.2	39.6	B	9.5	47.7	47.0	
9.5	59.2	35.0		9.0	44 3.7	30.8	K	7.8	37.6	8.9	B	9.4	12.3	18.7		9.5	17 1.9	7.5	
9.2	30 33.1	10.8		9.3	26.3	49.0		9.5	42.9	58.8		8.4	13.3	56.0		9.5	2.3	13.9	
9.1	36.2	41.9		9.3	57.0	31.5		9.1	47.7	22.3		9.2	19.7	53.6		9.5	4.2	0.1	B
9.5	38.3	6.8		9.0	45 36.6	50.8	R	8.8	54.2	31.7	B	7.4	45 0	14.0	L	9.5	16.6	12.7	
8.1	40.7	0.5	K	8.5	38.6	53.8	R	8.5	58.8	58.6	K	9.4	45.0	2.3		9.5	32.8	51.0	
7.5	51.1	21.8	K	8.6	40.4	25.0		9.0	56 2.7	56.5	K	9.5	52.8	21.9		9.5	38.0	2.8	
9.2	58.7	54.1		9.5	46 2.2	0.4	B	9.3	12.6	40.3	K	9.4	8 19.9	20.8		9.5	47.7	6.5	
9.2	59.6	18.1	B	9.5	8.0	14.6		5.2	12.9	51.7	K	9.1	33.8	3.3	K	6.7	57.5	22.1	K
9.5	31 14.3	18.1		8.5	15.7	43.9		8.1	48.3	47.3	K	9.5	9 3.2	31.2		9.3	18 18.5	23.1	B
7.5	16.6	41.5	L	9.0	36.3	27.7	L	9.0	58.2	5.6		9.3	4.0	12.6		9.5	20.4	24.4	
9.3	31.0	21.1	B	9.2	37.6	16.8		9.4	57 28.6	49.3		8.0	14.6	12.0	K	9.4	32.3	20.8	
9.3	40.5	27.3	K	9.5	47 6.3	39.4		9.0	58 24.6	53.1		9.0	43.4	27.7		9.5	36.4	30.8	B
9.5	47.3	18.1		9.2	8.3	33.1		9.2	28.9	25.3		9.3	54.6	19.8		9.5	19 8.2	35.6	
8.2	32 1.9	37.3	K	9.2	11.6	57.2		9.5	37.6	57 0		7.6	59.1	59.9	L	9.5	14.5	49.2	
8.7	21.5	59.3		9.3	27.3	0.6		9.3	39.5	7.2		8.8	10 2.3	0.5		9.5	19.9	32.8	
9.2	35.8	37.0	K	9.3	37.0	12.5		8.5	50.3	3.1	K	8.8	6.0	26.3	K	9.5	31.4	4.1	
9.0	49.0	18.4		9.0	48.7	11.5	K	9.0	51.4	38.4		9.0	17.3	28.3	K	9.0	37.6	29.1	
9.5	34 1.3	33.9		9.0	51.7	19.4	K	8.0	59 35.3	45.7	B	8.5	27.0	33.5	K	9.2	42.4	17.7	
8.8	24.5	20.8		9.5	48 3.0	47.4		9.5	47.6	32.5		9.5	35.7	35.6		9.2	45.7	37.7	R
9.1	29.8	7.1	K	9.4	17.3	18.4		9.0	57.2	21.5	K	9.5	55.6	35.2		9.5	50.1	57.5	
9.5	32.7	59.4		9.0	29.6	25.2	K	9.5	0 20.0	32.5		9.5	11 4.7	21.8		9.3	51.4	19.9	B
9.1	45.1	6.1		9.2	31.6	18.9	B	9.5	21.3	49.6		8.5	25.0	24.9	L	9 0	53.2	37.5	R
9.5	49.3	29.4		9.5	43.7	55.2		8.8	22.9	19.7	K	9.5	33.2	29.3		9.4	55.0	24.8	
9.5	35 14.3	41.4		9.4	58.7	35.9		9.4	47.6	22.5		9.3	44.3	53.3		9.5	20 0.3	3.1	
7.8	50.7	14.6	K	7.8	49 16.5	5.6	K	9.5	56.3	19.0		9.5	12 0.9	42.1		9.5	1.1	30.3	
9.0	36 3.5	26.0		9.5	41.1	10.0		9.1	1 2.0	35.6		9.5	2.7	57.5		8.0	6.9	23.8	B
9.4	6.1	39.7		9.5	44.7	7.0	B	9.5	6.4	57 3		9.5	31.6	12.8		9.4	22.8	48.3	
9.5	11.7	18.1		9.5	48.0	16.0		9.2	51.2	2.3		8.0	40.8	53.9	K	8.5	45.6	6.4	
9.1	15.0	43.7	B	9.4	50 6.4	45.1		9.3	52.8	38.5	B	8.3	42.1	40.4		9.0	51.3	57.2	B
9.5	34.0	23.9		9.0	51 0.2	32.2		9.5	53.4	54.2		9.5	13 4.1	23.3		9.4	21 0.5	21.5	
9.5	40.5	50.0		8.5	1.4	49.4	K	9.5	59.5	48.4		9.5	7.6	30.1		9.4	4.3	6.7	
9.2	37 10.3	16.9		7.9	2.1	39.6	B	9.1	2 33.6	11.8		9.4	37.5	19.5		9.5	16.8	43.9	
9.0	10.7	45.2		9.4	2.7	19.7	B	4.2	34.7	48.6	L	9.1	51.9	30.9		9.5	24.4	2.7	
9.2	12.8	9.0		9.2	31.5	13.8	B	5.5	38.2	2.4	R	9.3	58.8	40.5	B	9.5	29.8	47.4	
9.5	46.0	36.0		9.3	32.5	17.8		9.5	3 17.3	31.9		9.3	14 1.0	41.7		9.5	36.7	8.7	
8.8	47.7	4.0	K	7.5	34.3	22.5	K	9.4	18.5	58.7		9.5	3.5	24.7		9.5	41.6	32.2	
9.4	38 31.2	32.5	B	9.5	42.3	1.2		9.5	35.2	57.7		9.1	3.8	4.4	K	9.4	43.8	47.4	
9.5	52.7	32.1		8.8	52 25.7	29.5	K	9.5	52.3	50.4		8.7	9.4	18.6		9.5	50.6	37.2	
9.5	39 12.7	44.3		9.4	31.4	55.5		9.3	4 2.0	14.0		9.5	10.5	44.5		9.5	52.1	15.8	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	18ᵘ	+20°			18ᵘ	+20°			18ᵘ	+20°			18ᵘ	+20°			18ᵘ—19ᵘ	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	21 55.4	18.6		9.3	30 35.4	15.1		9.5	38 24.6	17.6		8.8	47 49.0	17.5	K	9.2	58 58.4	16.4	
9.0	22 4.3	30.0		9.5	36.2	43.0		9.5	33.1	25.5		6.8	48 12.4	10.8	K	9.1	59 32.4	8.7	
9.2	5.0	25.6		9.0	42.5	27.3		9.5	39 2.8	47.0		9.4	13.3	0.9		9.5	38.2	38.8	
9.5	5.2	54.8	B	9.5	58.5	42.0		9.4	3.5	23.0		8.7	15.6	35.2		9.5	43.6	52.6	
9.4	15.3	4.2	B	9.4	59.7	3.0		9.3	13.3	18.2	B	6.5	18.1	26.3	S	8.9	48.3	7.7	
9.1	15.6	29.3		9.4	31 10.1	22.2		4.1	25.5	24.8	B	9 3	24.7	30.8	B	8.3	0 0.5	26.0	L
9.4	24.5	24.3		9.3	36.5	21.8		9.5	33.6	36.4		9.5	56.7	45.1		8.3	8.9	56.6	
9.5	42.4	30.5	B	8.9	40.1	2.4	B	9.4	46.7	44.6		9.5	57.3	54.2		9.5	13.5	3.9	
9.4	42.8	25.2	B	9.3	49.4	17.1		9.2	40 4.2	0.6	K	8.7	49 4.5	38.9		9.3	16.7	44.8	
9.5	43.6	36.0		9.4	56.4	51.4		9.5	27.3	4.6		8.8	12.0	5.3		9.5	26.7	38.6	
9.5	23 7.4	17.6		9.5	57.3	52.4		9.4	32.4	47.3		9.5	31.6	52.4		9.3	41.3	5.6	
9.5	34.5	28.4		9.5	59.2	2.4		9.1	33.4	11.5	K	9.0	37.5	24.5		9.4	47.2	42.4	
9.5	37.6	43.1		9.5	32 2.9	3.2		9.5	41 5.4	15.5		9.2	47.2	13.4	B	9.1	55.3	51.0	
8.5	39.9	57.4	K	9.4	5.2	2.6		9.2	8.6	33.5		9.5	50 2.4	6.7		9.4	57.7	45.1	
9.4	42.3	27.1		9.5	5.4	35.6	B	9.2	27.9	1.0	B	9.5	22.6	34.4		7.7	1 7.4	12.7	K
9.5	43.8	29.8		8.9	21.2	30.7	B	9.4	36.1	4.4		9.5	46.9	59.6		9.1	28.6	31.5	
9.5	24 4.8	52.3		8.5	45.7	44.9		8.3	42.7	46.5	K	9.2	54.5	23.3		9.4	39.6	30.7	
9.5	21.0	20.5		8.4	55.6	29.8	K	9.3	59.9	18.2		9.0	51 4.5	25.5		9.0	42.4	12.9	K
9.3	26.1	52.3		7.7	33 0.5	22.6	K	9.5	42 6.9	57.4		9.5	26.9	5.0		9.1	2 1.6	27.5	
9.0	26.4	2.4		7.5	6.8	48.5	K	9.5	17.0	16.9		8.8	30.7	37.9	L	9.3	5.9	57.3	
6.5	29.7	43.5	K	8.8	10.4	18.4	K	8.3	20.2	40.4	K	9.5	31.3	51.0		8.5	36.3	8.6	K
9.3	41.0	52.1		9.5	37.2	21.5		9.5	22.5	46.1		8.6	45.9	10.4	K	8.5	3 17.2	1.9	K
9.5	41.7	43.7		8.8	42.8	46.8		8.5	25.7	43.6	K	9.5	50.0	21.8		9.5	45.4	14.4	
9.5	25 10.8	58.1		9.3	44.9	55.7		9.3	36.5	17.5	B	9.5	55.3	5.2		9.3	54.1	47.7	B
9.5	19.7	24.5		9.5	47.4	29.4		9.2	43 4.8	49.6		9.4	59.7	42.5		9.5	59.4	3.9	B
9.4	36.9	32.0		9.5	57.4	58.2	B	9.5	13.6	0.7		9.5	52 5.6	32.4		9.5	4 5.7	32.3	
9.5	37.9	56.9		9.3	57.8	22.8		8.8	15.0	25.2		6.5	26.5	25.5	K	8.7	6.4	15.6	K
9.2	45.6	28.9		9.5	34 5.4	2.0		9.3	23.9	58.5		9.5	28.7	44.5		9.4	25.7	31.6	B
9.5	26 8.8	50.4		9.1	16.5	24.3	K	9.5	31.4	10.8		9.1	52.3	6.7	K	7.4	30.4	57.4	K
8.9	12.5	27.4		9.0	17.0	36.1	K	9.0	46.6	33.5		9.1	59.6	39.6		9.2	50.6	35.2	
9.0	14.5	45.1		9.5	28.5	2.5		9.4	55.2	26.6	B	9.4	53 6.0	29.3		9.3	5 23.5	20.1	
9.3	21.0	4.4	B	9.5	30.8	58.2		9.5	58.8	52.0		9.5	13.6	33.3		9.3	25.5	22.8	
8.3	36.4	18.0	K	9.5	46.9	56.2		9.3	59.1	35.2		9.5	34.4	41.3		9.5	43.8	52.4	
9.1	45.1	0.5		9.5	52.7	59.1		9.5	44 5.1	22.7		9.5	38.2	1.5		9.4	56.7	43.8	
9.0	48.8	0.4		9.5	35 8.0	7.4		9.5	11.6	27.6		9.5	53.1	47.2		9.4	57.8	48.5	
9.5	27 0.4	9.5		9.5	9.4	15.9		9.2	24.6	33.9		9.5	54 11.1	1.4		7.9	6 2.8	59.0	K
8.2	6.8	52.5	K	9.5	10.5	4.0		9.3	33.0	37.8		9.1	12.0	29.1		8.5	5.6	16.2	
9.3	20.1	55.5	B	9.5	27.6	42.5		8.7	36.6	42.2	B	9.1	23.8	50.2		9.5	16.9	57.8	
9.5	22.6	51.8		9.2	30.8	48.3		8.9	37.9	57.7		9.5	42.5	20.3		9.5	19.6	6.3	
9.4	22.8	53.7		9.4	34.3	2.6		9.0	40.4	18.9		8.5	43.0	25.5		9.3	50.3	20.6	
9.5	23.0	23.3		9.5	36 2.6	59.4		9.2	41.9	5.6		9.0	55 3.7	37.5		9.2	7 6.6	56.4	
9.4	29.4	55.6		9.0	10.0	36.7		9.2	42.6	47.9	B	6.0	8.0	37.8	B	9.0	41.4	45.6	
9.5	40.7	18.4		9.4	23.2	3.6		9.0	44.5	28.1	B	8.9	9.0	33.6	B	8.3	8 3.3	42.2	K
9.5	55.5	27.5		9.4	28.6	34.8		9.4	51.2	38.2		9.5	36.9	54.1		9.5	29.7	8.3	
9.5	28 1.6	29.5		8.0	34.6	32.3	K	9.2	57.5	26.8		9.4	46.6	35.2		9.5	32.0	26.2	
9.5	2.5	54.7		8.6	40.8	51.3		9.1	45 2.9	55.9		9.5	57.3	3.1		9.5	41.3	8.7	
6.5	4.5	21.4	L	9.0	48.8	52.8		9.2	16.8	48.5		9.5	56 34.1	30.7		9.4	56.0	12.2	B
9.0	24.4	19.0	B	9.4	54.8	48.5		9.2	19.4	12.7		9.3	58.3	3.8		6.0	9 2.6	58.8	K
9.5	29.9	0.3		9.4	55.3	51.2		9.1	22.8	53.0		9.4	57 8.3	5.8		9.4	4.3	44.2	
9.5	44.6	33.7		9.3	37 3.9	50.5		8.7	28.7	42.4	K	9.2	17.6	29.3		7.7	37.1	3.0	K
8.8	29 6.3	5.1		9.5	10.5	22.3		9.4	47.1	19.9		9.2	18.0	20.4		9.3	42.1	33.5	
9.5	16.6	35.2		9.4	12.6	50.4		9.5	52.3	5.6		8.3	25.4	3.1	K	9.4	10 24.6	55.7	
8.4	17.9	57.4	K	9.5	13.8	52.7		9.3	53.8	54.5		8.7	58 1.9	34.9	K	9.5	30.6	57.2	
9.5	30.6	21.8		9.4	28.2	51.0	B	9.0	54.8	48.3	K	9.3	6.1	47.1	B	9.4	31.5	53.5	
9.5	42.8	55.9		9.5	32.6	33.0		9.3	46 4.8	53.0	R	9.3	14.7	44.6		8.3	35.8	18.2	K
9.0	45.6	21.8	B	9.5	36.0	12.2		8.3	7.9	59.7		9.5	16.5	24.1		9.3	39.9	1.9	
8.5	47.4	3.3		9.5	54.1	12.5		9.3	39.3	26.2		9.1	38.7	2.2		9.3	52.4	47.8	
8.4	30 0.8	52.0	K	9.4	54.9	57.4		9.1	45.8	52.5	K	8.2	41.5	25.1	L	9.5	56.5	33.5	
8.8	12.8	55.7	K	9.0	38 5.7	43.3		9.3	47 4.3	2.7		9.3	42.7	0 7		9.1	11 33.2	11.3	
9.4	29.9	2.7		9.5	6.5	6.1	B	9.5	22.5	15.5		9.3	50.2	0.5		9.5	12 0.0	4.1	B

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	19ʰ	+20°			19ʰ	+20°			19ʰ	+20°			19ʰ	+20°			19ʰ	+20°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.3	12	4.6	55.3	R	9.5	23	2.7	13.7	9.5	34	11.7	12.2	9.5	41	40.1	7.8	9.0	49	40.2	15.8	
9.5		6.6	58.8		9.3		17.9	25.1	9.5		36.5	50.7	9.5	42	11.7	32.9	9.5		40.9	23.2	
9.0		18.9	22.2		9.1		52.3	2.0	9.5		50.8	19.6	9.4		15.4	27.1	B	8.9		46.5	3.4	
9.5		33.8	25.7		8.9		55.6	2.0	K	9.2		51.3	43.1	9.3		19.5	26.9	B	9.2		59.9	22.7	
9.5	13	14.7	15.6		9.3		56.8	20.5	R	9.5	35	2.0	54.6	9.4		30.4	9 8		9.4	50	7.8	44.9	
9.5		42.3	43.3		9.3	24	2.1	59.5		9.2		10.6	32.0	9.1		34.8	3.1	B	9.1		12.4	21.7	
9.5		47.7	12.2		8.7		12.0	27.1	K	8.5		15.7	44.4	K	8.5		40.5	3.7	K	9.5		25.7	14.7	
8.2	14	4.6	35.5		9.4		12.2	35.7		9.4		15.9	23.6		9.5		41.8	16.2		9.4		26.0	27.3	
9.2		18.6	9.3		9.5		35.1	1.9		9.0		29.3	43.1		9.3		48.0	26.8		9.4		39.4	46.1	
9.4		34.9	23.1		9.0		37.0	54.2	K	9.4		32.1	33.0		9.4		51.2	39.9		9.1		39.6	57.2	
9.4		35.6	33.0		9.2		37.5	1.9		9.1		38.9	23.1		9.3	43	1.4	47.6		6.8		40.2	36.7	R
9.3		36.6	59.7		8.8		38.6	32.8	R	9.1		39.8	19.4		9.5		10.6	17.9		9.1		47.8	17.7	
9.4		54.5	51.5		9.1		42.2	37.2		8.5		42.4	46.8	K	9.3		19.8	17.0		9.3		48.1	6.3	
7.8	15	1.8	41.4	K	9.5		53.7	2.8		8.3		48.3	40.4	K	9.5		23.7	48.8		9.1		54.7	14.9	K
9.5		9.7	15.2		7.0	25	45.2	38.0	R	9.2		57.8	43.1		9.0		29.7	15.2	K	9.5	51	8.2	11.0	
9.2		16.6	23.7	B	8.8		49.3	40.5	R	9.2	36	5.5	50.5		9.3		30.8	19.6		9.5		19.4	46.2	
8.7		24.6	57.7	K	9.4	26	28.5	53.1		9.5		16.6	6.8	B	9.5		36.5	6.1		8.5		34.6	9.4	K
9.5		59.5	50.3		7.8		43.3	41.5	K	8.7		30.4	45.3	K	9.5		54.6	57.5		9.3		41.0	27.3	
9.1	16	8.9	23.1		7.8		57.5	6.1	S	9.5		32.9	36.1		9.5	44	1.7	13.5		9.0		46.1	34.7	
9.5		10.5	3.8		9.5	27	2.4	37.6	B	9.2		36.8	36.3	B	8.1		12.7	12.3	K	9.2		51.6	31.7	
8.8		18.2	15.2		9.5		3.8	43.4		9.0		39.4	36.5	B	9.5		23.2	11.8		9.5		56.5	36.4	
9.3		39.9	23.8		9.2		9.8	16.2		9.5		40.3	2.9		9.2		38.6	57.0	K	9.2	52	17.0	54.1	K
7.8	17	6.8	17.9	K	9.4		20.3	18 2		9.4		43.8	18.9		9.4		58.6	57.2		9 3		27.6	8.3	
9.5		8.2	36.2		9.2		36.4	45.4		9.5		44.2	13.2		9.5	45	2.5	3.9		9.5		40.5	55.0	
9.1		14.5	54.5		9.4		47.6	2.0		9.4	37	9.8	24.9		9.5		30.0	9.9		9.3		59.6	8.3	
8.4		59.7	15.0	K	9.5		56.5	51.3		9.2		12.3	17.7		9.5		34.0	52.8		8.9	53	5.1	33.5	
9.5	18	8.2	55.2		9.5	28	3.9	24.9		9.5		22.5	50.3		9.5		36.3	4.2		9.0		16.6	32.5	
9.1		22.9	53.9	B	9.5		38.1	35.2		8.8		31.1	34.2		7.7		38.1	33.0		9.3		18.6	10.3	
9.5		23.0	54.7		9.0		41.8	16.5		8.6		33.9	21.9	K	9.5		40.7	12.1	B	9.0		26.5	4.9	
9.5		34.1	53.7		8.7	29	3.6	2.3		9.5		42.5	6.1		9.4		50.4	47.8		8.8		26.7	11.8	
9.1		43.8	18.3		8.7		11.1	34.3	R	9.1		43.8	20.2	K	9.5		51.9	54.2	B	9.4		37.5	51.6	
9.5		59.4	49.2		9.5		13.8	12.7		9.0	38	0.7	59.9	K	9.2	46	8.8	41.6		9.2		43.6	57.6	
9.5	19	1.2	36.6		8.3		14.0	30.0	R	9.4		6.3	44.6		9.3		9.1	32.0		8.8	54	8.5	6.2	
9.1		19.7	15.2		8.5		19.5	51.0		9.5		17.0	51.8		9.2		11.9	22.9	K	9.5		9.2	14.8	
9.1		26.8	15.9		9.0		30.7	11.0		9.4		18.7	18.0		9.4		30.2	38.2		9.5		15.0	28.0	
9.5		43.1	55.4		9.2		37.0	30.0		9.5		28.7	13.1		9.2		39.8	19.9		9.4		34.7	22.5	
9.3		50.3	44.8		8.9		39.2	38.6		9.5		32.0	7.2		9.5		45.0	5.8		9.4		41.5	41.0	
9.5		59.0	29.7		9.3		51.1	34.2		8.2		53.1	34.2	S	9.4		47.1	32.0		9.4		50.8	43.8	
7.7	20	32.5	52.4	S	9.3		55.1	35.5		8.7		55.0	30.5		8.6		52.4	47.1	K	9.3		51.7	27.5	
8.9		32.8	44.5		7.2	30	17.3	0.8	K	9.5		55.5	2.6		9.5	47	0.6	57.7		8.8		54.1	17.7	K
9.0		42.5	51.9		8.7		18.1	34.0	K	9.5		58.1	45.4		8.2		14.1	55.2	K	9.5	55	5.5	3.2	B
8.0		42.9	48.9	R	9.2		26.3	42.6		9.5	39	5.0	46.9	B	9.3		17.2	6.7		8.7		16.6	47.4	
9.3		46.4	47.4		9.0		40.2	37.9		9.5		9.5	43.9		9.2		23.2	8.1	B	9.1		17.9	13.4	
9.5		49.5	5.7		9.2		41.7	12.0		9.5		19.9	20.9		9.5		31.1	52.4		9.0		20.0	15.2	K
9.5		50.3	11.6	B	9.4		52.3	44.6		9.5		25.0	53.0		9.5		33.5	47.0		9.3		45.4	55.8	
8.6	21	3.4	22.9	S	9.3	31	40.6	57.8		9.4		27.1	51.0		9.1		47.1	32.8		9.5		45.7	49.1	B
9.4		7.7	15.5		9.5		41.6	59.2		9.5		29.7	15.5		9.3	48	6.6	51.0	B	9.5		47.6	24.7	
9.4		11.8	19.7		9.1		45.2	38.5		8.8		49.6	9.3		9.2		11.8	16.2		8.9		52.6	23.8	R
9.4		15.6	32.4	B	9.5		57.6	8.4		9.3		55.6	1.6		9.4		17.5	2.8		8.2		56.2	31.7	K
9.4		32.4	47.6		6.7		59.0	27.7	R	8.7		59.1	34.7	S	9.2		18.9	23.3		9.0		58.5	41.2	
9.5		37.5	51.1		9.5	32	0.1	10.4		9.5	40	0.3	55.0		9.4		20.1	34.2		9.4	56	2.0	6.8	B
9.4		44.3	44.9		9.5		52.7	33.2		8.3		8.5	3.4	K	9.5		39.4	49.5		9.5		12.1	5.4	
8.6	22	4.1	1.7	S	9.5		54.7	15.7		9.5		10.9	10.0		9.4		46.0	29.5		9.3		25.4	30.5	B
9.4		21.6	55.3		9.4		58.5	29.0	B	9.5		13.0	11.5	B	9.1		44.7	19.2	K	9.4		27.5	39.1	
9.1		23.4	45.4	K	7.8	33	20.0	27.3	R	9.1		18.3	40.6		9.4		47.2	36.9		9.5		28.0	50.5	
9.5		36.5	3.5		8.4		23.5	4.1		9.5		38.5	1.9		9.4		55.6	9.5		9.1		33.6	4.4	
9.5		37.3	40.5		9.4		54.5	52.7		9.4		40.3	44.6		9.5	49	0.5	1.6		9.4		40.3	28.3	B
9.5		49.6	10.9		6.7	34	7.6	8.7	R	9.5	41	6.6	56.2		9.5		25.5	50.3		9.4		40.6	31.3	
9.5		54.6	34.7		9.2		8.0	29.0		9.5		25.2	16.8		9.4		26.8	20.7		9.5		50.4	59.8	
9.5	23	2.3	58.2		9.2		9.5	44.8		9.3		33.0	29.0		9.1		39.8	18.0		9.5		51.0	10.6	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	19h—20h	+20°			20h	+20°			20h	+20°			20h	+20°			20h	+20°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	57 0.1	28.3		7.6	4 20.3	4.1	K	9.4	13 6.4	49.9		9.4	21 42.0	13.4	B	9.5	30 4.0	13.7	
9.5	2.5	0.2	B	6.3	41.0	42.7	K	8.5	22.7	47.5	K	9.5	52.3	34.3		9.5	19.4	57.2	R
9.3	20.2	51.8		9.0	41.6	12.4		9.4	26.6	34.1	B	8.7	54.9	48.5	K	9.5	36.5	53.3	
9.3	30.2	45.6		8.1	55.4	55.5	K	9.5	35.2	38.0		7.6	55.7	2.5	K	9.5	51.1	56.6	
9.0	31.7	22.4		9.1	5 6.7	15.8		9.2	35.4	23.1		8.0	22 16.4	55.9	K	9.3	51.5	14.4	
7.5	31.9	39.3	K	9.5	29.5	54.0		9.5	14 6.9	52.9		9.5	24.7	25.1		9.0	31 2.6	55.6	
9.3	33.6	10.3		9.5	37.0	12.9		9.4	12.7	5.3		9.5	31.0	29.5		9.4	8.0	16.9	
9.5	57.7	54.7		9.3	38.6	33.1		9.3	22.1	46.3		9.3	32.8	0.7		9.4	15.6	55.7	
9.3	59.3	59.5		9.5	43.5	9.0	B	9.5	45.2	46.3		9.4	40.3	30.4	B	9.1	16.5	14.3	B
9.0	58 3.2	40.6	K	8.0	43.9	38.1	K	9.4	46.7	42.8		9.5	42.4	45.5		9.4	28.4	12.7	B
9.5	3.5	2.7		9.3	45.1	54.9		9.5	53.8	30.2		9.5	59.6	37.6		8.7	28.7	38.1	L
9.4	14.0	39.3		8.8	59.2	58.3		9.5	55.1	56.3		9.3	23 15.6	21.0		9.0	30.5	45.7	
9.5	18.7	7.3	B	9.5	6 6.6	23.7	B	8.0	15 27.0	56.8	K	8.2	21.8	7.6	K	8.5	42.3	14.1	B
8.8	20.8	36.6	K	9.5	8.2	15.7		8.9	47.7	16.6	K	8.9	49.0	24.3		9.2	51.1	22.9	R
9.4	29.6	24.2		9.5	16.3	2.9		9.5	49.3	40.2	B	9.5	58.3	5.7		9.3	55.1	32.7	
8.7	30.9	17.8		9.5	20.5	59.6		9.5	56.5	46.7		9.5	24 10.5	45.3		9.0	32 0.0	23.4	K
8.9	42.2	14.9		8.8	36.4	30.7		9.5	56.6	43.8	B	9.4	13.0	47.1	B	8.8	2.3	50.2	
9.1	58.3	59.3	K	9.3	45.5	9.4		9.5	16 2.7	23.0		9.5	13.2	40.4	B	4.7	2.5	41.5	K
9.2	59 6.1	3.1	B	8.3	47.1	42.8	R	9.5	6.9	43.7	B	9.5	21.2	56.5		9.5	3.1	15.8	
8.3	10.0	39.7	K	9.5	51.2	12.8		9.5	30.5	2.6		9.4	24.4	54.9		9.4	7.2	54.5	B
9.3	21.5	29.9		9.5	7 1.0	58.6		8.0	43.1	24.0	B	9.3	27.7	20.0		9.5	41.2	1.9	
8.1	36.6	6.8	K	9.5	4.2	23.0		9.1	43.7	10.6		6.1	30.0	7.2	R	9.2	53.8	28.6	K
8.0	50.8	6.2	K	8.5	18.4	41.2	L	9.5	46.3	44.9		9.2	45.3	45.2	R	9.0	54.0	44.4	
9.0	52.4	55.2	K	9.5	23.5	29.6		9.4	48.8	32.4		9.4	25 7.4	11.7		8.9	33 4.6	41.1	
9.3	59.0	51.3		8.8	35.6	37.2		9.4	17 24.0	8.3		9.5	9.7	45.0		9.4	12.8	23.9	K
9.5	0 19.7	26.9		9.5	42.7	37.7		9.5	27.1	39.2		8.9	20.5	47.9		9.5	22.5	10.2	
9.5	23.5	31.5		9.5	46.0	30.8		9.5	33.7	16.1		9.5	31.2	18.6		9.4	24.5	11.9	B
9.3	29.4	43.3	R	8.7	8 4.4	13.0	R	9.3	36.5	3.5		9.4	31.9	8.4		9.4	25.1	7.8	B
8.5	31.0	7.7	K	9.5	9.5	0.7		9.5	47.2	3.3		9.3	33.2	27.4		9.5	45.3	56.8	
9.5	34.5	14.4		9.5	10.3	56.6		9.5	56.3	19.5		9.0	46.3	28.5		9.4	45.4	8.5	
9.5	41.1	37.2		9.5	25.2	20.9		9.4	59.5	6.3		7.0	47.8	22.5	K	8.2	51.6	22.0	K
9.4	45.2	43.6		9.5	27.8	28.7		9.5	18 7.5	15.8		9.5	48.6	44.9		9.4	52.3	14.8	
9.5	49.0	1.9		9.0	29.2	7.4	B	9.5	8.2	48.9		9.1	26 2.2	36.0		9.5	34 8.5	15.0	
8.1	51.8	41.0	K	9.5	35.5	32.5		9.0	12.2	38.0	K	9.5	7.7	48.7		8.9	14.2	57.4	
9.5	1 11.1	36.9		9.3	54.0	28.5	B	9.1	52.4	31.8		9.5	11.0	57.1		9.5	35 6	22.0	
9.4	16.6	20.2	B	9.2	55.0	47.7		8.7	58.9	11.0		9.1	13.1	43.8	B	8.9	38.9	42.8	
9.5	17.2	11.1		9.5	9 26.5	55.7		9.2	19 7.5	33.8		9.1	24.2	15.8		9.0	40.8	43 0	
9.5	17.3	19.0		9.5	40.4	47.9		9.1	10.0	40.8		9.5	36.9	50.4		9.5	35 8.8	48.1	
9.2	33.7	20.4		8.1	54.4	6.3	B	5.6	16.1	56.6	R	9.1	45.5	51.6		9.4	12.1	4.2	
9.5	43.6	12.7		7.0	10 12.0	58.1	R	9.5	32.8	41.8		9.5	27 4.0	26.1		7.7	21.0	12.6	
9.3	51.2	40.2		8.8	20.5	48.4		7.8	33.9	6.6	B	9.5	4.7	16.9		8.5	21.1	44.2	
8.3	56.0	7.1	K	9.4	39.7	58.3		9.1	36.3	54.8		9.2	8.2	8.0	B	7.8	23.4	10.6	
9.5	2 9.9	19.0		9.5	44.8	13.9		9.5	58.6	9.0		8.7	9.2	37.0	K	9.4	46.5	41.6	
9.0	15.6	32.6		8.0	59.8	30.1	B	9.5	20 5.1	11.8		9.5	12.4	41.3		9.1	50.6	57.3	
9.4	17.4	58.2		9.5	11 1.0	10.3		9.4	18.9	51.6		9.2	13.6	37.0	K	9.5	52.6	58.3	
9.5	22.0	6.5		9.5	11.9	29.1		9.5	23.8	25.8	B	9.5	19.5	18.7		9.3	36 0.9	17.0	B
8.6	22.2	59.1		9.5	15.9	23.9		9.5	34.3	35.4		8.9	20.7	14.0		9.3	9.8	40.2	
9.0	57.5	58.9		8.3	24.2	40.3		9.5	37.6	27.3		9.1	23.0	55.4		9.5	11.5	30.5	
8.2	3 17.4	39.5	L	9.4	29.2	52.0		8.6	38.2	32.5		6.2	42.7	29.2	K	9.5	13.8	24.2	
8.1	26.2	56.2	K	8.8	36.7	7.9	R	8.9	43.9	5.1		9.3	48.0	35.4		9.0	14.4	53.4	
9.3	28.3	38.2	B	9.5	12 0.6	0.7		6.8	45.7	0.3	K	9.5	28 18.8	57.3		8.4	20.2	20.4	R
7.8	29.2	28.3	K	9.4	24.3	11.4		9.4	49.7	40.3		8.5	47.9	10.5	K	9.5	34.5	18.9	
6.4	32.7	29.2	K	9.5	26.8	30.2		9.5	56.8	31.0		9.3	50.5	33.6		8.8	42.5	33.5	
8.2	32.8	35.0	K	7.8	28.2	46.1	R	9.4	21 1.5	59.6		9.5	52.7	5.8		9.3	52.5	14.7	
9.2	38.7	33.6	K	8.7	33.4	25.4	K	9.5	5.6	28.6		9.2	29 5.1	27.9		9.3	37 2.0	7.2	
9.5	42.0	4.1		9.5	34.8	10 1		8.9	15.3	59.7	K	9.1	7.2	50.3		9.5	5.4	18.8	
9.1	47.6	29.0	B	7.4	36.1	0.6	K	9.0	21.8	44.8		9.5	19.3	45.5		8.3	6.1	43.5	
8.2	59.0	49.0	L	9.0	37.1	39.8		9.5	27.1	21.0		9.5	46.0	56.8		8.8	13.8	37.0	
9.5	4 7.9	3.3		9.4	52.4	54.8		9 0	34.1	55.2		9.5	51.6	16.9		6.9	31.5	54.4	
8.2	11.8	31.2	K	9.5	53.0	22.1		8.6	39.4	54.5	K	8.6	53.9	5.9	K	8.2	57.6	47.9	

+20°

5001—5060				5061—5120				5121—5180				5181—5240		
	21ᵘ	+20°			21ᵘ—22ᵘ	+20°			22ᵘ	+20°			22ᵘ	+20°
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′
8.9	37 49.5	3.6		9.1	53 12.0	51.9		9.3	11 56.8	28.8		9.3	26 10.5	24.9
8.9	51.0	10.3		8.3	37.4	38.5	K	9.0	12 0.1	54.3		9.0	12.4	30.7
8.8	38 27.8	17.2	K	9.3	48.4	42.7		9.3	4.9	6.3		9.4	27 45.4	40.0
9.5	28.9	40.1		9.5	58.3	3.2		9.5	27.9	36.0		9.4	52.8	32
9.5	32.9	14.9		8 0	54 18.4	59.3	K	9.4	37.5	38.0	B	9.3	28 16.6	40
9.5	48.4	19.1		9.0	54.6	31.5	K	7.8	42.0	16.6	K	8.5	29 13.5	56
8.8	39 20.9	30.5		9.5	56 5.0	35.2		8.4	43.7	23.5	R	9.0	15.8	47
9.4	51.7	21.1		9.5	19.5	55.7		9.4	13 11.0	3.5	B	9.5	45.2	2
8.0	40 12.4	37.1	K	9.5	32.8	20.4		9.5	16.3	13.5		8.6	30 5.1	5
9.5	29.4	14.2		9.5	57 4.6	26.6		9.2	27.6	56.8		9.3	7.6	
8.5	33.9	33.6	K	8.7	53.3	21.0	K	9.2	54.6	24.9		9.5	25.8	
9.2	35.1	50.6		8.5	58 3.1	33.3	B	9.5	55.3	16.3		9.5	25.9	
9.0	41 6.0	31.8	R	9.5	3.4	11.3		7.5	14 33.8	20.1	K	9.1	52.3	
8.4	16.1	29.4	K	8.0	7.5	21.6	B	8.6	50.3	14.9	K	9.5	31 17.8	
8.8	16.2	36.7		9.5	22.2	36.2		9.0	15 26.3	47.2		7.2	30.9	
8.5	18.4	19.3	K	7.6	59 11.5	5.7	K	9.5	50.4	44.4		9.4	32 0.5	
9.0	40.4	15.2	K	9.1	13.1	23.2	B	9.4	16 12.6	51.8		9.1	21.3	
9.0	42 1.9	41.9		9.4	23.1	19.9		8.7	40.7	7.6	K	9.5	45.8	
9.5	14.7	34.9		9.4	32.7	9.5		6.0	41.7	6.4	K	9.3	33 7.9	
9.5	24.8	54.8	B	9.5	47.2	35.4		9.0	58.3	26.7		9.4	20.	
9.1	43 6.1	1.5	B	9.5	55.8	36.3		9.5	17 7.3	31.0		9.4	2	
9.5	47.9	13.1		9.2	56.3	16.7	K	9.4	21.4	31.9		8.8	4	
9.3	44 15.8	5.4		9.3	0 23.8	46.5		9.3	55.8	11.0		8.2	5	
8.9	36.9	40.9	R	9.3	44.8	6.0		9.0	18 3.3	46.0		9.4	34 2	
9.5	38.7	9.1		9 4	1 24.7	35.4		9.3	3.5	3.0		9.5	1	
9.3	45 21.4	43.6		9.4	2 11.3	26.0		9.4	12.8	2.6		9.5	1	
6.3	32.7	35.4	K	9.5	23.4	54.4		9.1	20.9	54.5		9.3		
8.8	54.4	38.8		9.1	52.4	15.9	B	9.1	24.8	55.4		8.2		
7.8	46 20.1	15.0	K	9.4	3 5.4	20.9		9.5	33.5	2.5		9.5	35	
9.3	28.9	35.8		8.5	7.0	27.0	L	9.3	45.3	28.9		9.0		
9.5	45.9	20.5		9.2	8.5	14.2		9.0	19 8.4	21.5	K	9.5	36	
9.4	55.0	56.7		9.5	40.7	54.0		9.1	17.8	47.5		9.5		
9.5	47 9.0	6.5		6.0	41.0	16.0	L	9.0	24.2	21.5	K	8.9		
9.5	12.4	16.0		9.1	4 21.9	34.4	B	9.4	27.0	40.7	B	9.3		
9.5	23.8	15.7		9.1	44.4	55.0	K	9.3	32.1	56.6		8.8	3	
9.2	54.7	57.5		9.4	51.5	33.8		9.5	47.9	40.0		9.5		
9.5	58.0	3.0	B	9.5	5 5.6	13.9		8.5	20 14.0	42.1	R	7.7		
9.2	48 6.7	9.1		9.5	20.9	35.0		8.8	15.5	52.3		9.4		
8.5	14.5	5.7	R	9.5	6 7.3	15.6		9.4	23.3	49.5		9.0		
9.4	32.6	22.5	B	9.3	28.8	1.6		9.5	21 3.0	48.9		8.5		
6.5	35.4	10.5	L	9.4	34.0	8.0	B	9.3	3.4	2.1		9.5		
9.3	46.8	51.4		9.0	35.0	24.1	K	8.3	32.5	37.8	K	9.5		
8.3	49 18.9	59.1	B	7.8	49.2	21.4	K	8.8	34.3	57.1	R	9.4		
9.5	28.4	9.7		9.5	7 34.1	8.2		9.4	58.0	47.2		9.		
8.3	36.7	0.5		9.1	48.3	53.7		9.5	22 10.2	51.6		9.		
5.8	37.9	34.9	K	8.0	8 11.1	34.6	K	7.4	12.1	37.8	K	9.		
6.8	49.4	27.7	L	9.5	11.5	49.2		9.5	16.0	23.8	B	9		
9.5	52.9	14.2		9.5	9 14.9	4.6	B	9.5	25.0	18.6		8		
9.4	50 5.4	22.8		9.5	21.7	17.7		9.5	52.7	13.2		9		
9.4	11.5	48.9		9.0	26.6	56.4	K	9.5	23 8.5	40.9				
9.5	53.8	49.5		9.4	10 5.7	22.5		9.0	9.5	34.0				
9.5	51 8.7	24.6		9.2	18.8	7.8		9.2	20.3	5.5	R			
9.1	18.3	14.5	B	8.8	23.5	43.3	K	9.5	28.9	41.9				
7.9	45.1	14.1	K	9.4	40.2	48.3		8.0	51.5	15.6	K			
9.4	46.4	40.8		9.5	51.1	25.9	B	9.5	24 16.5	44.5	B			
9.3	53.9	21.1		9.5	52.8	47.1		9.1	20.2	24.3				
9.3	52 15.9	47.4		9.5	11 1.6	26.2		9.5	49.6	40.8				
9.5	16.0	12.5		9.4	10.3	57.6		9.5	25 6.2	8.3				
9.5	17.2	43.0		9.3	24.7	20.8		9.5	27.3	44.0				
9.5	54.2	7.2		9.5	46.3	37.8		8.0	35.0	17.7	S			

		3		
		.8		
		20.7	R	
		47.6		
		37.0	B	
		32.0		
		2.4	43.7	B
		25.0	30.2	R
		33.8	37.1	B
		51.6	7.2	K
	49 12.4		17.1	B
.3		21.1	32.8	
9.5		30.1	25.3	
9.5		38.6	40.7	
9.5	50	9.7	7.0	
9.5	51	44.6	41.8	
9.4		47.6	6.2	
9.5		57.2	29.7	
9.5	52	1.0	26.9	
9.3		22.6	40.3	
8.8	53	12.0	15.1	K
9.5		35.2	12.9	
9.1		39.6	40.3	
9.5		52.0	16.5	
8.5	54	19.6	44.1	K
8.7		22.0	28.9	K
9.5		43.7	57.4	
9.5	55	13.5	8.0	

–640

			+21°	
		9.9	54.3	
		.5	8.6	
		3.1	23.3	R
		6.2	31.0	
		8.3	40.5	R
		9.0	4.9	
		46.9	35.5	K
		46.9	40.3	K
		58.6	22.3	
		17.4	14.7	
		1.2	33.1	K
		37.4	10.5	
		40.4	37.3	K
		41.3	7.2	
		55.6	11.3	R
	0	3.8	51.9	B
		24.9	59.0	
		49.5	2.4	
	1	20.7	3.0	B
		50.8	51.8	
.0	2	33.0	31.0	K
.3		39.8	52.1	
.7		46.9	40.7	K
9.3		49.6	27.6	
9.1	3	27.9	33.8	K
8.6		37.8	9.7	K
8.9	5	55.6	59 5	B
9.1	6	12.1	55.5	
9.5		36.9	10.4	
8.8		37.9	43.2	K
9.5	7	48.8	56.0	
9.0		54.7	32.4	K
9.5	8	13.2	3.1	
9.5		39.1	30.3	
9.3		57.3	44.9	
9.0	9	0.6	54.8	K
8.2		13.0	59.2	K
6.0		48.4	13.3	K
9.5		57.5	13.9	
9.2	10	11.8	58.1	
9.5		22.1	48.2	
9.5		22.6	21.7	
5.8	11	3.6	26.8	K
9.5		54.6	46.2	
9.3	12	10.6	53.2	K
9.5		37.1	26.8	
9.5		40.8	55.1	
9.5		52.8	39.4	
9.5		55.2	45.1	
9.5	13	4.5	58.1	B
9.2		22.1	54.4	K
9.5		57.0	10.0	
9.5	14	29.7	1.5	
9.5		40.0	16.4	
8.9		47.1	1.9	
9.0		50.6	46.9	K
9.0	15	11.1	3.1	
9.5		15.6	43.1	
8.6		25 9	12.0	K
9.5		26.1	5.6	

641—700

m	4ʰ ′	″	+21° ′	
8.0	15	37.8	23.1	K
4.3	16	44.0	58.1	K
6.0		47.3	51.6	K
7.5	17	44.0	8.3	K
9.3	18	37.2	39.0	
9.5		41.0	9.3	
6.5	19	24.9	17.1	K
8.7		34.0	59.7	
9.5	20	4.9	18.1	
9.3		15.9	55.3	
9.3		19.2	44.3	
8.8		24.8	34.5	K
9.5		35.2	49.5	
9.5	21	43.0	2.6	
9.4	22	52.7	50.1	
9.2	23	17.4	18.6	K
8.0		32.8	19.2	K
9.5	24	18.5	34.9	
9.3		20.9	5.9	
9.0		44.5	21.3	
9.5		47.9	56.9	
9.3		59.6	55.9	B
9.3	25	30.8	2.7	
9.5		46.2	17.3	
9.4		53.4	39.6	B
9.5	26	1.5	19.9	
9.5		41.6	5.8	
8.3		58.4	42.7	K
9.0	27	19.7	10.3	
7.5		37.4	13.7	K
7.8		40.4	23 6	K
9.5		42.2	59.4	
9.5	28	24.8	44.8	
9.5		25.4	24.4	
9.1		25.4	59.4	
9.3		45.1	24.4	
9.5		59.2	25.4	
9.5	30	43.5	15.8	
9.5		57.4	45.2	
8.2	31	1.5	13.6	K
9.1		13.4	59.2	
9.5		25.1	59.2	
9.1	32	18.7	5.0	
9.5	33	10.9	0.2	
9.0		14.0	12.4	
8.8		21.5	13.5	K
9.2	34	5.3	24.5	B
9.5		13.7	3.7	
9.5		25.8	27.0	
9.3		37.6	43.8	
9.5	35	6.6	32.2	B
8.5		44.9	23.3	K
9.2	36	59.2	11.7	
8.9	37	21.8	0.8	K
9.3		24.0	4.4	
9.5		29.8	19.3	
8.8		59.5	14.0	K
9.5	38	13.9	6.5	
9.1		31.6	57.0	
9.0		45.2	1.9	B

101—160				161—220				221—280				281—340				341—400			
	0ᵘ—1ᵘ		+21°		1ᵘ		+21°		1ᵘ		+21°		1ᵘ—2ᵘ		+21°		2ᵘ		+21°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	39	11.5	27.4		7.5	3	53.3	56.7	K	8.0	30	1.2	58.0	K	9.0	59	6.9	25.4	K	9.5	20	38.0	58.2	
8.8		14.6	7.1		9.3		59.0	9.3		7.0		4.3	9.3	K	9.3		19.4	7.8	B	9.5	21	34.0	1.7	
9.5		23.3	17.3		9.5	6	11.5	31.8		9.3		18.4	13.8		9.4		29.7	4.7		9.4	22	11.4	1.5	
9.4		58.5	56.6		9.4		33.7	3.3		7.4		58.3	11.7	K	9.3	0	4.3	5.9		8.5		30.1	49.2	B
9.5	40	49.4	50.8		9.5	7	14.8	42.9		9.5	31	35.4	24.9		9.5		20.6	45.0		9.0		50.5	32.7	
9.5		57.8	54.6		9.4		25.2	28.7		9.1	32	28.4	44.8	B	8.9		23.0	5.7	K	8.0	23	10.5	26.8	R
9.5	41	33.7	2.1		9.3	8	25.9	19.8		9.4		43.2	53.5		9.5		25.8	8.6		8.0		26.7	2.7	
9.0		36.1	20.3	B	9.1	9	16.5	58.1		9.5		46.5	32.9		8.9		54.7	41.6		7.5		57.4	21.5	L
9.5	43	0.2	32.2		8.7		31.0	6.3		9.5		48.9	24.5		9.3	1	20.0	44.0		8.0	24	10.9	39.9	K
9.1		31.8	23.1		8.4		53.4	55.9	K	8.8	33	14.9	44.6		9.4		21.5	57.7	B	9.4		12.3	53.5	B
7.0		55.2	50.1	R	9.1	10	38.1	44.6		9.5	34	17.2	57.0		8.9		27.0	19.1	K	9.5	25	28.5	44.3	
9.4	44	43.0	6.9		9.3		42.2	18.7		9.5	35	21.3	34.0	B	9.5	3	32.1	56.1		9.1		36.6	35.0	
9.5		57.8	16.3		8.7	11	5.9	38.7	B	9.5	36	33.2	54.2		8.8		32.4	7.7		8.5	26	22.0	3.2	K
9.1	46	11.3	8.2		9.5	12	22.4	27.8	B	8.8	38	11.4	44.7	K	9.5		55.8	36.1	B	9.2		26.1	18.7	B
9.5		23.4	7.6		9.5		38.1	57.0		9.5		11.6	7.7		8.9	4	4.8	53.1	B	9.4		45.5	49.2	
8.4		23.7	40.4	K	9.5		57.5	13.9		9.1		32.4	7.7		9.5		10.0	40.9		9.4	27	22.0	13.6	
9.4		53.3	38.7		9.4	13	23.2	43.2		9.4	39	4.9	15.6		8.8		12.3	44.4	K	9.5	28	32.3	8.8	
9.5	47	28.1	5.7	B	7.0		23.7	36.3	K	9.5		19.5	26.2		8.5		13.6	18.2	K	9.5	29	38.0	31.2	
9.4	48	45.3	18.4		9.1		42.8	37 0		9.5		45.4	44.0		9.5		36.0	11.7		9.5		39 2	14.6	
9.5		52.7	10.8		7.5		56.1	46.6	K	9.0	40	2.5	5.5		9.3		46.1	44.3		9.5		52.5	45.7	
9.2		53.8	4.1		9.5	14	24.3	4.3		9.3		28.7	26.2		9.0		56.9	37.0	K	9.0		55.0	22.3	K
9.5	49	8.7	49.2		7.3		33.5	19.7	K	8.1		37.4	40.5	K	9.5	6	35.6	29.2		5.8	30	34.9	20.7	K
9.5		27.9	48.1		9.0		35.8	33.5		6.0	42	9.2	32.8	K	8.4		35.7	54.6	R	8.8	31	2.1	3.8	K
9.0	50	18.1	25.3		9.3	15	20.7	3.0		8.7		12.4	27.0	K	7.8		48.0	57.6	L	9.5	32	20.8	2.5	
9.1		46.7	17.0	B	9.5		24.2	41.2		9.5		42.5	20.3		9.0		57.3	32.6		9.5		32.6	29.5	
8.5		48.9	38.1	K	9.4		41.8	21.8		9.4		45.3	4.1		9.2	7	12.3	54.2		8.2	33	14.8	37.4	K
8.5		53.6	48.4	K	9.5	16	19.4	59.8		9.5	44	28.5	19.8		8.6		14.8	57.6	R	9.1	35	2.7	53.4	
9.4	51	3.6	10.0		9.0		22.2	6.9	R	9.3		41.5	5.1		9.3		33.3	24.3		8.8		15.0	58.5	
9.4		30.4	52.2		8.0		38.1	15.9	K	9.5		43.1	29.5		8.9		38.8	9.9	K	9.5		19.2	23.8	
9.5		37.8	18.0		9.5	17	42.5	6.2		8.3	45	7.9	18.0	K	8.5		47.7	48.2	L	9.5		51.2	47.2	
9.5	52	19.9	8.0		9.1		53.0	49.4		9.3		21.7	45.4		9.5	8	3.9	8.4		9.1	36	23.7	25.4	
9.3	53	25.7	38.6		9.5		59.4	58.1		9.5		31.8	45.0		9.1		27.7	47.2		8.8	37	24.7	5.3	K
9.5		59.8	23.8		9.3	18	5.8	49.0		9.4		48.5	29.6		9.1		54.3	12.9		9.4	38	45.7	33.4	
9.5	54	42.3	26.4		9.4		20.0	47.6		9.5	46	0.4	29.9		9.2		54.7	49.6		8.0		50.7	58.4	K
8.8	55	30.5	59.9		9.5	19	36.8	7.6		8.7		18.3	10.2	K	9.1	9	22.0	40.9		9.5	39	36.9	53.8	
9.5		32.9	46.3		9.1	20	23.2	53.8		9.0	47	4.3	6.2		8.4		25.3	32.6	K	9.5		57.9	5.1	B
9.0		34.9	30.5	B	9.4	21	4.3	19.5	B	9.0		26.2	12.6		8.3		34.5	59.6	K	8.8		58.7	35.8	
8.7		41.2	1.2	K	9.5		38.1	32.5		9.0	48	21.4	2.0		9.3		35.3	45.4		9.4	40	45.0	50.7	
9.5		46.6	10.3		9.0		40.2	11.1		9.3	49	36.8	54.5	B	8.5	10	13.0	20.8	K	9.4	41	30.2	40.6	
9.5		50.6	22.0		8.5	22	11.5	35.9	R	9.5		40.0	51.0		9.3		20.9	55.0		8.3	42	16.7	29.9	R
9.5	56	42.1	13.9		9.5		58.3	53.5		9.5		56.4	14.6	B	8.0		25.6	12.4	K	9.5		19.4	55.3	
9.2	57	25.1	11.1		9.5	23	13.4	22.2		9.4	50	56.1	20.0		8.5		52.6	13.2	K	9.3		40.1	3.9	
9.3	58	7.8	38.7		8.3		48.5	59.6	K	8.8		59.5	11.5	K	8.8	11	22.3	31.2		9.5	43	6.1	1.3	
8.3		28.9	47.7	K	9.5	24	25.0	50.9		8.1	51	21.0	9.2	K	9.5		47.8	58.8		9.5		14.9	57.4	
8.8		33.1	12.1		9.0		28.1	25.2	B	9.4		29.1	9.5		9.4		55.2	12.7	B	9.2	44	11.7	44.4	K
9.1	59	3.9	20.3		9.4		45.4	19.2		9.0	53	4.2	3.2		8.4	12	30.3	45.7	K	9.5		36.4	58.1	
9.4		10.3	49.7		9.0	25	13.6	35.7		8.3		30.5	54.7	K	9.4		58.3	44.0		9.5		51.2	26.2	
9.5		25.7	26.4		9.0		26.3	48.3	K	8.8		39.7	11.9		9.2	13	51.0	20.5		9.4	45	5.9	32.7	B
9.5		42.8	32.1		9.5		47.6	53.4		9.5		40.4	26.3		8.6		58.3	6.8		9.1	46	46.7	8.2	
7.5	0	22.1	11.2	K	9.2	26	2.0	55.0	R	7.5	54	3.6	25.0	K	8.5	14	18.4	28.8	K	8.5		46.7	0.2	
8.5		33.8	4.4	K	9.5		3.4	59.4	B	9.5	55	46.0	37.5		8.6		49.6	36.4	K	9.0	48	44.2	37.6	K
8.4	1	10.8	34 9	L	9.4	27	1.4	31.5		9.5	56	35.1	3.1	B	8.3	15	21.2	48.2	K	9.5		51.0	55.4	B
9.4		12.9	8.7		9.5		14.9	29.0		9 5		35.1	4·6		8.0	16	27.0	46.4	K	9.4		59.5	33.2	B
9.5		29.1	53.6		9.5	28	19.9	38.8		9.3	57	20.6	28.2		9.5	17	29.2	5.8		9.5	49	34.3	59.2	
9.5		31.5	59.3		9.5		38.0	20.7		8.9		52.3	26.7		9.1		34.5	30.9		9.5	50	22.3	52.5	
8.4		35.8	48.3	L	9.5		48.1	2.5	B	9.1	58	10.2	24.2		9.4	18	16.5	54.9		8.0		32.3	26.0	K
9.5		57.8	54.2		8.5		53.4	42.4	K	9.5		13.3	35.3		9.5		30.3	52.7		7.0		34.5	1.5	K
8.8	2	24.1	58.3		8.8	29	35.5	50.5	K	9.3		18.9	0.2		9.3	19	0.6	55.8		9.5	51	44.4	28.6	B
8.8	3	49.7	34.2	K	9.3		40.7	5.3	B	6.0		27.0	57.5	L	9.0		47.5	26.7	K	9.1	52	46.5	4.0	
9.5		50.4	7.3		8.0		41.9	49.5	K	9.3	59	2.3	18.8	B	9.3	20	17.5	44.0		8.9	53	5.8	37.8	K

401—460				461—520				521—580				581—640				641—700			
	2ᵘ—3ᵘ		+21°		3ᵘ		+21°		3ᵘ		+21°		3ᵘ—4ᵘ		+21°		4ᵘ		+21°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.4	53	9.4	44.7		9.5	18	30.2	14.0	9.3	38	23.6	12.8	9.5	55	39.9	54.3	8.0	15	37.8	23.1	K
9.2		41.2	31.3	K	9.5	19	0.2	36.7	9.4		26.8	48.5	9.5		41.5	8.6	4.3	16	44.0	58.1	K
8.0	54	6.1	48.5	L	9.5		27.2	7.8	9.0		52.2	25.4	8.9		53.1	23.3	R	6.0		47.3	51.6	K
9.5		7.3	57.1		9.5		51.2	23.7	9.5	39	44.2	50.4	9.0		56.2	31.0		7.5	17	44.0	8.3	K
8.2		41.7	24.3	K	8.3		56.6	33.0	K	9.5	44.4	16.8	5.0	56	8.3	40.5	R	9.3	18	37.2	39.0	
9.4		49.6	57.6		9.4	20	12.4	52.1	B	8.1	46.3	55.6	B	9.5		9.0	4.9		9.5		41.0	9.3	
8.5	56	14.7	8.9	K	9.5		56.2	13.9		9.3	50.8	13.4		6.5		46.9	35.5	K	6.5	19	24.9	17.1	K
9.3	57	12.2	17.0	K	9.5	21	14.0	4.4	B	9.0	40	0.0	20.8	B	8.7		46.9	40.3	K	8.7		34.0	59.7	
9.5		48.9	51.3		9.2		49.0	57.2	K	9.2		0.2	45.9		9.5		58.6	22.3		9.5	20	4.9	18.1	
9.5	58	31.7	47.5		9.3		49.2	5.2		8.2		9.5	28.5	B	9.5	57	17.4	14.7		9.3		15.9	55.3	
9.5	0	23.2	24.3		9.4	22	6.6	16.4	K	9.5		35.2	2.3	B	8.2	58	1.2	33.1	K	9.3		19.2	44.3	
9.4		56.5	15.3	B	9.5		42.0	5.2		9.5		52.2	17.4		9.3	59	37.4	10.5		8.8		24.8	34.5	K
7.7	1	45.4	11.5	B	9.3		54.1	17.3		9.5		52.7	44.5		8.8		40.4	37.3	K	9.5		35.2	49.5	
9.5		56.7	37.4		8.8	23	0.9	18.1		9.5	41	12.1	37.1		9.0		41.3	7.2		9.5	21	43.0	2.6	
9.5	2	0.0	55.5		9.3		6.1	19.8		6.5		24.6	48.4	K	9.0		55.6	11.3	R	9.4	22	52.7	50.1	
7.7		19.6	20.6	K	9.5		22.1	34.7		9.5		31.1	16.1		9.5	0	3.8	51.9	B	9.2	23	17.4	18.6	K
9.4		26.2	13.5		9.2		31.7	8.9		9.0		57.1	48.2		9.5		24.9	59.0		8.0		32.8	19.2	K
8.5		50.8	52.5	K	9.5		50.6	30.9		9.5	42	16.3	51.8		9.2		49.5	2.4		9.5	24	18.5	34.9	
8.2		58.1	36.9	K	9.2	24	7.4	7.8		7.2	43	6.5	36.0	K	9.3	1	20.7	3.0	B	9.3		20.9	5.9	
9.3	3	30.6	9.5		9.5		42.2	58.1		9.5		8.6	19.9		9.5		50.8	51.8		9.0		44.5	21.3	
9.0	4	7.2	12.0		9.2		44.2	9.4		9.0		11.6	51.4	K	9.0	2	33.0	31.0	K	9.5		47.9	56.9	
8.8		23.2	20.5		9.5	25	4.7	32.2	B	9.5		46.9	44.5		9.3		39.8	52.1		9.3		59.6	55.9	B
9.3		41.3	58.0	B	9.5		32.2	51.0		9.2		49.1	2.0	B	8.7		46.9	40.7	K	9.3	25	30.8	2.7	
9.5		54.4	54.0		8.9		42.8	13.4		9.5	44	18.5	32.4		9.3		49.6	27.6		9.5		46.2	17.3	
9.5		55.1	27.4		9.5	27	50.6	23.9		9.5		32.6	14.1		9.1	3	27.9	33.8	K	9.4		53.4	39.6	B
8.3		55.2	4.7		9.1		52.1	21.5		9.3	45	6.8	19.9		8.6		37.8	9.7	K	9.5	26	1.5	19.9	
8.0	5	26.9	43.2	K	8.6	28	3.7	16.7	K	9.5		14.4	55.6		8.9	5	55.6	59.5	B	9.5		41.6	5.8	
9.4	6	12.3	57.7		9.5		50.2	58.1		9.5		18.1	43.1		9.1	6	12.1	55.5		8.3		58.4	42.7	K
9.4		24.1	57.7		8.7		54.7	52.2	K	8.8		24.0	9.5	K	9.5		36.9	10.4		9.0	27	19.7	10.3	
9.3		45.2	10.1		8.8	29	27.6	12.9	K	7.5		31.6	30.3	K	8.8		37.9	43.2	K	7.5		37.4	13.7	K
9.5	7	15.3	15.1	B	9.5	30	40.6	44.6		9.5		40.5	23.1		9.5	7	48.8	56.0		7.8		40.4	23 6	K
8.8	9	1.1	44.1	K	7.2		46.1	23.2	K	9.5		55.0	29.6		9.0		54.7	32.4	K	9.5		42.2	59.4	
9.3		31.9	3.3		9.4	31	21.2	13.4		9.5	46	13.2	47.3		9.5	8	13.2	3.1		9.5	28	24.8	44.8	
9.5		32.4	30.0		9.5		23.9	42.1		9.5	47	19.6	26.8		9.5		39.1	30.3		9.5		25.4	24.4	
9.5		53.2	19.6		9.0		50.4	51.3	K	8.0		25.0	20.7	R	9.3		57.3	44.9		9.1		25.4	59.4	
9.1	10	18.1	9.7		8.5		50.8	59.9	K	9.0		31.6	47.6		9.0	9	0.6	54.8	K	9.3		45.1	24.4	
9.5		35.2	20.5		9.4		58.5	51.6		9.4	48	7.9	37.0	B	8.2		13.0	59.2	K	9.5		59.2	25.4	
9.5		37.6	47.7		9.5	32	15.6	42.7		9.2		7.9	32.0		6.0		48.4	13.3	K	9.5	30	43.5	15.8	
9.0	11	30.7	12.2		9.5		25.6	56.1		9.4		22.4	43.7	B	9.5		57.5	13.9		9.5		57.4	45.2	
9.5	12	4.9	53.7		9.5		31.7	49.2		9.0		25.0	30.2	R	9.2	10	11.8	58.1		8.2	31	1.5	13.6	K
9.5		5.2	34.1		9.5	33	22.2	18.8		8.8		33.8	37.1	B	9.5		22.1	48.2		9.1		13.4	59.2	
9.0		23.4	7.7		9.5		41.0	3.5		8.7		51.6	7.2	K	9.5		22.6	21.7		9.5		25.1	59.2	
8.8	13	12.4	13.2	K	9.5		52.5	57.9		9.3	49	12.4	17.1	B	5.8	11	3.6	26.8	K	9.1	32	18.7	5.0	
8.5	14	28.4	11.4	K	9.0		54.7	1.2		9.3		21.1	32.8		9.5		54.6	46.2		9.5	33	10.9	0.2	
9.5		45.7	54.9		9.5	34	30.5	17.3		9.5		30.1	25.3		9.3	12	10.6	53.2	K	9.0		14.0	12.4	
9.0		48.0	2.6	K	9.5		41.1	30.5		9.5		38.6	40.7		9.5		37.1	26.8		8.8		21.5	13.5	K
6.8	16	8.8	31.1	K	9.5		48.6	19.0		9.5	50	9.7	7.0		9.5		40.8	55.1		9.2	34	5.3	24.5	B
8.8		25.2	45.5	K	9.4	35	1.5	41.6	B	9.5	51	44.6	41.8		9.5		52.8	39.4		9.5		13.7	3.7	
9.5		25.7	19.1		9.4		1.6	58.4		9.4		47.6	6.2		9.5		55.2	45.1		9.5		25.8	27.0	
9.5		47.8	19.4	B	9.1		13.1	36.4		9.5		57.2	29.7		9.5	13	4.5	58.1	B	9.3		37.6	43.8	
9.5		50.1	54.9		9.5		52.8	55.4		9.5	52	1.0	26.9		9.2		22.1	54.4	K	9.5	35	6.6	32.2	B
9.5	17	1.2	22.1		9.5	36	6.7	58.8		9.3		22.6	40.3		9.5		57.0	10.0		8.5		44.9	23.3	K
9.5		2.8	58.2		9.4		26.3	48.5		8.8	53	12.0	15.1	K	9.5	14	29.7	1.5		9.2	36	59.2	11.7	
9.1		50.6	35.3		9.0		29.2	34.0	K	9.5		35.2	12.9		9.5		40.0	16.4		8.9	37	21.8	0.8	K
9.5		59.5	1.5		9.0		37.0	51.2		9.1		39.6	40.3		8.9		47.1	1.9		9.3		24.0	4.4	
9.5	18	1.8	7.2		9.4		40.1	14.7		9.5		52.0	16.5		9.0		50.6	46.9	K	9.5		29.8	19.3	
9.5		7.1	57.1		9.1	37	0.2	0.7		8.5	54	19.6	44.1	K	9.0	15	11.1	3.1		8.8		59.5	14.0	K
9.3		12.9	55.1		9.5		9.2	24.3		8.7		22.0	28.9	K	9.5		15.6	43.1		9.5	38	13.9	6.5	
8.2		13.6	26.7	K	9.0		37.1	33.3		9.5		43.7	57.4		8.6		25 9	12.0	K	9.1		31.6	57.0	
9.5		29.2	6.1		9.5	38	0.0	43.2		9.5	55	13.5	8.0		9.5		26.1	5.6		9.0		45.2	1.9	B

701—760				761—820				821—880				881—940				941—1000			
	4ᵘ	+21°			4ᵘ—5ᵘ	+21°			5ᵘ	+21°			5ᵘ	+21°			5ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	38 55.9	56.0		9.5	58 11.9	36.9		9.2	13 34.1	4.5	K	9.5	23 4.9	55.1		9.0	33 58.1	30.2	K
8.6	39 8.9	53.8	K	9.5	13.0	22.3		9.5	46.2	40.6	B	9 0	12.8	34.0	R	8.8	34 7.1	18.6	
9.1	21.3	54.7		9.5	49.0	50.5		9.5	14 17.7	17.6		9.2	16.0	39.9		9.5	23.0	2.7	
9.5	23.5	21.6		9.0	59 7.9	29.6	K	9.5	15 0.0	26.5		9.4	24 2.6	15.4		9.5	25.6	6.5	
9.5	37.6	22.6		9.4	9.5	51.9		9.5	13 3	15.2		9.5	3.7	34.9		9.1	29.7	20.0	
9.5	54.6	32.4		6.3	15.3	30.5	B	9.5	29.0	30.6		9.4	34.2	19.1		8.3	41.1	20.6	K
8.0	40 10.2	4.0	K	9.2	32.7	37.7	K	9.2	59.5	23.5	K	9.4	35.5	7.0		8.7	52.1	48.0	K
9.5	39.2	8.6		9.5	40.0	51.2		9.5	16 1.3	37.5		9.5	52.1	35.7		9.5	35 5.8	24.5	
8.2	41 7.3	41.1	K	9.5	50.0	47.1		9.5	10.2	57.0		9.5	25 12.2	6.7		8.9	9.9	52.9	K
9.3	42 10.5	9.4		9.0	0 7.7	18.3	K	9 5	14.5	36.8		9.5	29.4	6.3		9.4	18.1	43.8	
9.5	26.0	46.2		9.5	24.0	41.2		9.5	23.6	3.6		neb	49.3	55.2		9.5	27.8	54.9	
9.4	38.2	14.1		9.2	42.4	56.8		9.5	31.4	7.8		9.0	55.1	31.0	K	9.5	37.0	6.8	
9.5	43 18.6	52.8		9.3	44.3	30.1		9.5	35.5	58.2		9.5	26 4.1	42.6		9.0	43.1	17.9	
9.3	37.9	2.9		9.1	1 0.3	38.8	K	9.5	41.4	43.3		9.5	11.5	50.5		9.0	36 2.7	52.5	K
8.9	41.1	51.0	K	9.5	6.0	43.6		9.5	45.0	38.3		9.5	12.7	12.5		9.5	7.0	38.7	
9.3	49.8	49.2	B	8.2	10.2	48.1	K	9.5	48.3	2.0		8.5	45.1	6.1	R	9.3	9.1	57.9	
8.6	44 20.9	59.8		9.1	10.4	38.8		9.4	48.5	48.3	R	8.9	47.0	11.7		9.5	12.0	45.3	
9.0	25.8	38.6		8.0	31.7	57.6	K	9.5	17 8.7	14.5		9.5	52.3	15.5		9.1	14.6	23.4	R
9.5	43.1	59.5		9.0	36.0	47.7	K	9.0	10.0	39 0		7.8	59.8	18.1	R	9.4	22.2	24.7	R
9.0	45 41.4	40.8		9.5	2 0.6	23.2		9.4	23.0	5.6	K	8.9	27 4.6	58.9		9.5	26.1	43.3	
9.0	45.2	29.7		9.5	6.0	1.4		9.5	56.6	12.6		8.9	43.1	5.6	S	9.5	27.5	14.1	
8.7	59.3	6.9		9.5	13.8	9.8		9.5	18 1.0	34.5		7.4	44.7	53 7	K	9.5	27.5	17.1	
8.4	46 9.4	54.7	K	8.6	17.4	36.0	K	9.2	9.0	4.3	K	9.5	55.0	32.1		9.5	33.1	13.1	
9.0	24.6	26.5		9.5	25.0	0.4		9.5	12.0	53.3		9.5	28 22.1	19.6		9 5	37.4	53.9	
9.5	31.1	3.9		8.3	35.1	56.1	K	9.0	43.8	21.8		9.5	29.9	20.8		9.1	39.3	25.0	R
8.7	35.4	36.3	K	9.0	36.0	32.2	K	9.3	49.0	54.7		8.8	43.4	40.3		9.5	43.0	53.2	
8.8	58.0	57.8	K	9.5	3 2.7	20.1		5.8	56.1	48.5	K	9.4	49.6	7.4		9.4	50.2	11.2	
9.5	47 6.8	38.7		9.5	8.6	36.7		9.0	19 13.9	19.4	K	3.1	58.9	2.7	R	9.4	55.1	40.1	
9.5	14.9	19.6		9.5	37.0	31.8		9.5	18.8	48.5		9.1	29 9.7	48.1		9.5	57.0	45.0	
9.5	26.0	44.6		9.5	49.0	14.3		9.4	19.1	17.9		9.4	16.0	6.2		9.3	57.7	53.9	
8.2	36.8	20.6	L	9.5	59.0	31.7		9.4	29.1	48.0		9.5	20.5	34.6		9.5	37 1.6	59.8	
9.5	43.0	49 9		9.0	4 2.3	38.8	K	9.0	38.1	19.1	K	9.0	26.6	47.9	R	9.0	3.2	23.4	R
9.1	53.9	19.3		9.5	10.9	48.1		9.2	38.7	46.5		9.2	32.1	55.6	K	9.5	3.6	59.7	
9.5	48 1.0	5.0		9.5	12.0	37.4		8.7	56.9	23.5	K	9.5	41.0	31.1		9.5	8.5	55.7	
9.5	17.0	19.2		9.5	31.5	0.2		9.0	58.1	34.0		9.5	43.8	40.0		8.3	10.9	40.1	L
9.5	29.5	56 1		7.7	5 27.1	3.2	K	9.5	20 4.1	45.1		9.5	30 11.7	34.0		9.4	15.6	14.4	B
9.5	51.8	8.5		9.4	51.2	44.0		8.4	35.6	11.3	K	9.5	17.0	6.3		9.5	18.7	13.1	
9.5	49 10.6	35.6		9.5	6 4.6	1.0		9.5	37.9	22.9		7.0	45.1	40.4	K	8.0	20.8	14.9	R
9.5	54.0	6.5		9.5	27.0	13.6		9.4	40.8	26.4	B	9.5	48.3	54.2		8.5	24.1	12.9	L
9.0	50 20.3	31.0		9.0	29.3	19.3	K	9.5	44.0	40.2		9.4	31 9.8	0.6		9.0	26.9	23.0	R
9.5	28.9	58.6		8.7	52.8	32.5	K	9.3	47.1	44.0		9.4	25.9	24.3		8.8	38 4.6	8.4	
9.5	51 15.6	4.2		9.5	7 10.0	39.1		9.5	21 7.0	0.8		8.8	28.0	15.2	K	9.5	16.5	10.4	
9.3	36.6	46 0		9.5	28.1	0.2		9.5	12.9	2.3		8.7	33.6	12.5	K	8.7	19.1	36.3	
9.5	49.0	31.7		9.5	55.3	4.1		9.5	19.6	56.2		9.2	44.0	38.7	R	8.3	27.0	48.6	L
9.0	52 5.0	0.6	K	9.5	8 22.5	50.5		8.7	27.1	15.4	K	9.3	32 8.4	53.5		9.5	36.6	12.8	
9.5	53 7.8	33.2	B	9.5	35.4	38.0		9.3	29.1	14.9		9.4	21.2	35.2	R	9.5	43.5	7.0	
8.6	26.2	6.4	K	9.5	38.0	18.4		9.5	37.2	28.3		9.5	26.1	43.6		9.5	53.1	15.1	
9.5	29.0	19.8		9.0	54.3	31.8		9.2	42.3	31.5		8.7	26.5	14.7	K	9.5	39 2.4	32.8	
9.5	44.1	50.4		9.5	9 6.1	1.5		9.5	57.3	45.0		9.5	37.0	49.9		9.5	4.0	25.5	
9.5	51.4	17.8		9.5	32.0	40.1		9.4	22 0.8	57.9		9.3	47.6	3.4		9.5	6.4	43.7	
4.8	54 26.8	22.8	K	9.5	34.7	49.8		9.5	3.8	23.9	B	9.2	49.8	59.1		9.5	8.5	50.9	
9.5	55 16.9	39.1		9 3	41.9	7.3		9.5	8.6	28.4		9.5	52.9	26.1		9.5	8.6	9.7	
9.5	24.7	36.7		7.8	50.3	38.8	K	9.5	18.1	7.8		9.5	33 6.2	37.7		9.3	12.6	55.2	
8.2	42.1	27.7	K	9.5	10 13.6	7.7		9.5	19.9	35.7		9.5	10.1	17.9		9.5	23.8	21.8	
6.7	43.6	4.6	K	9.2	28.2	34.0	K	9.4	22.5	30.3		9.0	22.1	29.7	K	8.5	25.5	0.3	K
9.5	56 5.0	58.5		5.5	34.4	57.2	K	9.5	27.1	12 2		9 5	23.3	37.7		9.3	27.1	2.9	K
9.5	13.5	19.3		9.4	38.4	35.6	B	9.5	28.6	8.8	B	8.7	24.5	30.0	K	9.5	41.7	34.5	
9.5	16.1	9.3		9.4	54.7	26.9		9.5	41.1	34.4		9.5	32.9	18.2		9.5	57.0	26.2	
9.5	57 5.3	21.1		9.5	11 55.0	24.8		9.4	45.8	19.8		9.5	45.8	18.4		9.3	57.1	57.5	
9.5	47.8	59.2		9.5	56.6	9.4	B	9.3	23 4.0	31.2		9.5	53.0	56.5		9.4	40 12.8	41.2	

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	5ᵘ	+21°			5ᵘ	+21°			5ᵘ—6ᵘ	+21°			6ᵘ	+21°			6ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	40 16.5	57.2		9.5	49 25.5	6.7		9.5	59 8.0	35.6		9.5	9 3.8	15.6		7.7	18 37.6	22.7	K
9.4	25.2	1.9		9.4	43.0	1.8		9.5	8.7	57.4		9.3	13.0	31.0		8.1	40.1	3.5	K
7.9	32.3	5.0	K	8.5	47.1	28.3	K	9.4	12.8	19.2	B	9.5	15.2	26.2		9.2	54.1	58.8	
9.5	32.5	35.4		9.5	56.7	28.0		9.5	15.8	37.7		9.2	21.9	53.6		8.9	19 14.3	54.1	K
9.5	38.7	26.3		9.5	50 1.9	0.5		7.8	21.4	18.7	L	9.5	29.6	8.3		9.5	15.5	58.4	
9.5	41.0	33.4		8.5	5.1	12.7	L	9.4	25.5	7.1		9.0	43.3	53.3		9.5	27.0	7.6	
9.0	49.8	15.1	K	9.2	6.8	38.6		9.2	44.9	47.6	K	9.5	45.0	17.3		8.1	29.6	14.3	L
8.5	55.1	46.4		8.9	9.0	45.8		9.5	46.0	8.6		9.4	49.6	42.8		9.5	36.0	46.5	
9.5	41 23.9	5.4		9.3	28.2	16.7		9.5	55.3	51.8		9.1	56.7	53.3		9.5	37.3	42.5	
9.5	42 2.1	14.9		8.8	37.6	44.4	L	9.3	0 13.1	38.5	R	8.1	59.3	14.0	L	9.5	48.9	13.9	
9.5	57.1	29.7		9.5	43.7	2.5		9.3	33.5	34.3		8.7	10 26.0	48.7		9.0	56.8	40.4	
9.0	59.0	0.2		7.2	57.7	35.2	R	9.3	42.4	54.6		9.5	35.1	19.3		8.8	20 14.7	40.1	B
9.5	43 6.0	11.5		9.4	51 25.2	59.9		9.5	45.5	23.6		9.5	56.4	58.7		9.5	26.0	27.0	
9.5	13.8	15.1		9.2	40.0	55.0	R	9.4	46.4	20.1		9.4	57.4	21.8		9.5	26.4	29.4	
9.0	27.0	45.9		9.5	42.9	20.8		9.4	1 1.7	50.4		9.4	11 0.3	24.3	B	9.5	29.5	34.0	
9.2	38.9	53.4	B	9.5	52 6.5	23.4		9.5	14.3	1.0		8.7	4.2	31.8	K	9.3	37.2	50.5	
9.3	47.1	31.0		9.5	10.7	9.8		8.7	25.8	15.2		9.3	26.8	34.5		9.5	50.9	17.2	
9.5	55.1	53.9		9.5	13.0	12.7		9.5	31.7	33.4	B	8.9	46.1	35.7	K	9.2	21 1.5	17.3	B
9.4	44 2.9	47.3		9.5	14.1	1.5		9.3	40.2	42.1		8.0	51.7	8.8	L	9.5	4.4	9.2	
8.9	7.0	7.5		9.5	19.5	49.7		9.3	42.5	59.3		9.4	57.4	31.6		9.5	11.3	40.4	
9.2	8.6	35.4		9.5	25.9	5.2		9.4	56.9	32.2		9.5	12 17.1	43.0		9.5	15.1	4.0	
9.4	12.4	26.5		9.5	49.0	27.4		9.4	2 20.8	24.9		9.1	30.6	11.6		9.2	21.6	11.0	
9.5	30.1	1.5		9.5	53.6	18.3		7.8	35.9	35.5	K	7.5	34.4	11.6	K	9.5	31.4	2.6	
9.5	31.1	53.0		9.5	59.3	8.0	R	9.4	42.9	9.7		7.7	41.5	16.0	K	8.7	32.0	46.5	B
8.2	33.5	30.3	L	9.4	53 0.2	49.7		9.4	59.9	39.5	B	9.4	57.9	29.3		9.5	36.7	57.2	
9.5	53.4	31.5		8.6	13.0	27.0	R	7.3	3 8.2	54.0	K	8.7	13 2.6	18.6	K	9.5	37.5	10.8	
8.2	54.8	7.5	K	9.5	15.5	42.8		9.2	10.3	13.8		9.4	24.4	36.5		9.5	47.6	15.6	
9.5	57.1	29.0		9.4	24.8	59.1		9.5	19.0	40.3		9.0	32.8	4.1		8.1	22 16.0	53.8	K
9.5	45 14.0	29.3		9.5	26.7	52.6		9.5	35.0	57.5		9.5	14 1.1	0.3		9.5	21.8	50.8	
8.7	15.2	48.0	K	9.5	29.9	13.9		9.2	39.3	57.3		9.4	11.9	17.0	B	8.6	28.0	48.7	K
9.5	26.7	51.2		9.5	50.5	56.9		9.4	53.5	43.9		9.4	20.3	15.9		9.2	28.1	58.4	
9.5	28.6	0.1		9.2	55.4	50.7		9.5	4 1.3	20.8		9.3	20.4	33.3		9.2	32.7	53.8	
9.5	30.1	37.9		9.4	55.8	7.5		9.5	4.5	57.0		9.4	25.1	13.2		9.5	34.8	48.4	
9.5	45.3	54.5		9.2	57.2	52.9	K	9.3	12.2	17.4	K	9.4	27.4	29.1		9.1	23 5.5	29.8	
9.5	46 4.5	53.0		9.5	57.7	29.8	B	9.5	22.6	14.5		9.5	28.2	23.6		9.3	26.4	48.1	
9.5	6.2	46.7		9.5	54 58.0	55.6		9.4	24.1	56.5		9.3	29.1	55.6		8.5	44.4	32.5	K
7.8	19.1	22.3	L	9.5	55 13.8	30.3		9.5	45.1	27.0		9.5	46.0	27.5		8.8	58.5	5.0	K
9.5	31.0	53.7		9.5	15.4	55.2		9.5	5 14.0	24.9		9.1	56.7	6.4		9.3	59.2	5.6	
8.3	35.2	2.9	K	8.1	23.8	29.9	K	9.2	16.1	27.5	K	9.5	15 5.5	41.3		9.3	24 12.1	33.6	
9.5	37.5	7.8		9.5	34.2	5.6	B	9.3	22.0	58.5		9.4	19.6	11.8		8.3	12.5	31.4	K
9.5	45.5	13.4		9.4	55.7	4.0		9.4	22.6	27.3		9.5	19.8	49.7		8.4	13.2	45.0	
9.5	56.0	9.2		8.7	57.2	24.0	K	9.5	24.3	51.5		9.3	51.8	2.0	R	9.5	21.6	16.2	
9.5	56.1	42.7		9.5	59.0	53.6		7.8	45.9	49.7	K	9.5	52.5	51.6		9.5	51.1	56.8	
9.4	47 5.4	8.9		9.5	56 1.3	25.4		9.3	49.1	39.0	K	9.3	58.4	11.3		8.6	25 6.7	9.6	
9.5	19.1	47.9		9.2	20.5	52.4	R	9.5	58.4	13.3		9.5	16 4.0	16.9		9.5	19.2	48.5	
9.4	33.3	32.7		9.3	23.0	39.8	B	9.5	6 0.7	29.1		9.0	20.1	21.5		9.5	36.8	36.9	
9.5	35.6	8.5		8.9	24.3	38.0	L	9.1	28.9	14.8	R	9.2	26.4	34.0		8.3	39.9	32.9	K
9.5	36.5	3.0	B	9.1	29.2	50.9		9.3	48.5	17.5		9.5	29.3	41.1		8.6	47.0	31.9	K
9.2	42.1	35.2	K	8.7	35.6	23.4	K	9.5	7 0.3	45.9	B	8.7	40.6	39.8		8.5	54.2	45.4	
9.5	48.9	9.2		9.4	36.4	55.4		9.5	12.4	41.4		8.5	44.0	59.9		9.5	26 20.4	13.4	
8.9	48 3.9	42.6	K	9.5	53.5	9.4		9.5	13.0	35.6		9.0	53.3	36.5		9.4	33.6	8.1	
9.3	7.3	24.1		9.5	57 15.5	7.9		9.0	13.1	8.6	K	7.2	17 1.0	43.6	L	8.5	46.3	32.4	K
9.0	12.1	19.2		9.1	17.0	30.4	K	9.5	22.9	22.3		8.9	12.1	53.3	K	9.4	51.8	2.3	
9.2	22.0	9.3		9.4	40.1	25.2		9.0	25.0	44.4	K	9.4	18.0	28.0		9.3	59.9	1.5	
9.5	29.1	25.9		9.5	54.4	13.9		9.5	28.0	56.7		9.2	20.2	6.7		9.5	27 4.2	33.5	
8.9	42.3	57.7	K	8.2	59.2	53.8	K	9.5	49.5	18.3		9.5	28.3	42.5		9.3	11.0	6.4	
9.3	42.3	55.5		9.5	58 18.1	15.5		9.2	8 3.8	59.3		9.5	49.8	15.2		9.3	16.8	36.5	
9.3	42.6	41.3		9.4	47.4	39.3		8.8	18.7	40.3	K	8.7	51.3	41.5	K	9.1	22.6	51.0	
9.5	54.1	48.0		9.4	49.5	47.3		9.5	38.8	14.2		9.5	18 19.8	4.8		9.5	39.6	11.4	
9.5	49 13.1	9.7		8.0	55.7	53.1	K	9.5	56.2	14.6		9.3	27.9	33.3	B	8.7	45.5	25.2	K

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ᵘ		+21°		6ᵘ		+21°		6ᵘ		+21°		6ᵘ—7ᵘ		+21°		7ᵘ		+21°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	27	46.2	7.8		9.5	35	43.7	11.7	9.4	44	50.0	7.0	8.4	54	31.8	22.9	L	9.5	4	8.2	44.6	
9.5		47.3	36.7		9.2		58.8	2.5	9.0	45	4.5	2.8	9.5		34.0	55.5		7.7		9.0	34.5	K
9.5	28	2.1	52.9		9.4	36	22.0	29.0	9.4		5.1	22.5	9.4		52.9	48.5		9.5		15.2	26.7	
8.8		2.5	45.8	K	9.4		34.9	53.0	9.3		11.1	14.0	8.6		55.8	39.5	K	9.5		34.0	9.0	
9.3		26.5	14.4		9.3		37.3	12.4	9.2		16.4	3.8	9.5		57.0	2.2		9.5	5	20.7	41.7	
9.2		27.6	3.4		9.4		42.6	57.5	7.3		41.8	20.2	R	9.3	55	9.9	41.3	K	9.5		26.4	5.3	
9.5		28.3	6.0		9.5		50.5	14.6	9.4	46	9.8	51.3		9.3		13.8	36.7	K	9.5		49.2	37.0	
8.7		55.1	49.6	K	9.3		56.4	40.0	7.4		15.6	44.4	L	9.5		25.2	50.9		9.2		57.9	43.8	
9.5		56.6	11.8		9.3		58.6	34.2	9.2		23.7	48.4	L	9.3		25.7	39.5		9.5		59.2	43.0	
9.0	29	3.6	34.2	B	9.4	37	17.8	41.6	9.3		25.8	10.0		9.5		35.0	19.5		9.5		59.8	10.8	
9.5		4.4	33.4		9.4		34.2	57.5	B	8.8		30.7	46.8	L	9.4		37.4	14.3		9.2	6	25.0	33.1	
8.3		38.6	58.6	K	8.7		35.0	40.8	B	9.4		53.0	54.2		9.5		39.6	59.7		9.4		31.6	44.1	B
9.5		38.8	12.2	B	9.3		42.3	19.2		9.5	47	19.5	42.2		9.2		52.0	22.8		9.4		49.3	57.7	B
8.8		40.5	41.1	K	9.3		43.4	39.1		9.3		45.2	34.5	K	9.5		54.9	29.7		9.5	7	15.3	37.3	
9.5		57.8	44.0		9.1		47.7	1.5		9.1		48.8	7.9	K	9.3		57.0	13.6	K	9.0		37.2	21.5	
9.5	30	16.3	33.9		9.5	38	2.1	9.7		9.5		55.8	39.0		9.4	56	3.1	9.2	B	9.3		37.8	5.9	
9.3		31.0	22.6		8.9		4.1	2.9	7.8	48	10.2	9.1	K	9.4		8.2	4.8		9.5		42.0	40.0	
8.9		34.0	24.1		9.5		29.0	5.2		9.5		12.6	22.1	9.4		11.5	15.6		9.5		52.2	48.5	
9.5		37.4	0.7		9.4		36.6	54.1		9.3		34.9	10.7	K	9.5		14.4	26.8		9.3	8	9.1	41.6	B
9.5		38.3	49.7		8.8		42.9	45.9	K	9.5		35.5	53.0		9.5		22.2	59.1		8.8		15.6	59.9	
9.0		41.0	24.6		9.4		44.1	16.8		9.4		40.4	23.7		9.5		39.5	14.6		9.5		25.3	15.2	
9.3	31	3.4	0.8		9.0	39	3.7	33.2		9.0		42.0	58.6		9.4		57.5	22.1		9.5		27.2	7.7	
9.5		8.3	4.8		7.6		5.7	50.7	K	9.2	49	1.0	4.7		8.2	57	3.6	12.2	K	9.5		42.2	42.5	
9.5		21.0	31.3		9.5		12.9	15.8		9.5		3.5	55.2		9.0		4.3	54.6	B	8.1		43.3	0.1	K
9.1		46.6	18.0	B	9.5		16.8	43.3		9.3		4.8	12.3	K	9.3		38.9	33.3		9.0		43.7	14.8	K
9.5		46.7	57.0		9.4		23.9	30.5		9.5		19.2	55.2		9.5		43.8	40.6		8.5	9	1.2	31.5	K
9.5		50.6	5.3		9.0		32.6	0.3	B	8.5		24.3	26.8	K	8.8	58	7.1	6.3		9 3		45.4	28.0	R
9.5	32	0.8	56.6		8.0	40	9.9	30.6	K	8.7		28.1	17.3	K	9.5		27.2	41.2		9.5	10	21.4	37.7	
8.4		3.3	4.2	K	9.2		15.2	34.9	K	9.4		37.8	45.8		9.1		27.8	9.5		9.2		25.7	51.7	
9.4		4.9	14.8		9.5		17.4	34.5	B	9.3	50	0.0	44.2		9.5		46.0	22.2		9.5		35.3	46.5	
9.1		12.8	5.8		9.3		46.7	49.8	B	9.5		10.8	2.8		9.5		46.2	42.5		9.3		37.2	30.1	
9.5		22.9	14.8		9.4	41	3.0	26.6		9.5		10.8	4.7		8.9		48.5	6.9		8.7		37.7	13.1	K
9.5		38.5	22.0		9.5		11.7	51.8		7.9		11.6	48.5	B	9.5	59	15.4	48.9		9.5		50.3	3.2	
9.5		40.8	36.8		9.3		16.5	7.7		9.4		16.6	53.0		9 4		29.3	25.2		8.6	11	18.9	24.2	K
9.4		49.4	49.2		9.4		44.6	5.4		8.2		18.2	15.4	K	9.2		41.9	28.1	B	8.5		23.2	6.2	B
9.4		52.9	30.6	B	9.0		50.2	24.2		9.1		44.1	19.2	B	8.2		43.3	5.0	K	9.5		45.2	5.8	
9.5		53.4	30.9		9.5	42	2.4	56.7		9.3		46.8	0.5		9.5		51.5	41.3	B	9.5	12	18.2	43.2	
9.5		54.6	59.1		9.4		7.6	3.9		9.5		52.7	22.6		9.1	0	3.8	1.8	K	9.5		40.1	42.6	
8.8	33	7.0	19.2	L	8.9		27.3	34.9		8.5		55.4	13.4	K	9.5		15.2	43.9		9.2		43.3	1.4	
9.4		9.9	0.5		9.2		32.8	43.0		9.5	51	27.6	54.0		9.5		17.3	6.0		9.2	13	1.7	34.5	
9.5		12.3	2.5		9.5		34.1	15.3		8.7		28.8	17.7	K	9.4		22.9	45.9	B	9.2		22.8	23.6	
9.5		24.0	19.9		9.5		43.4	14.9		9.3		47.9	26.8		9.5		29.8	40.4		9.5		44.6	12.0	
9.4		34.3	59.3		9.0		44.5	4.0	B	9.3		49.6	29.9	B	9.5		41.0	11.5		9.5	14	24.6	15.1	
9.3		47.2	39.9		9.2		49.8	12.9		9.4	52	4.4	41.4		9.0		45.0	49.8	L	9.5		45.5	4.7	
9.5		53.6	7.9		6.0		51.6	56.2	K	9.3		7.1	9.6		9.4	1	8.2	26.9	B	9.5		45.8	17.7	
9.4		59.1	13.0	B	9.2		55.3	23.4	B	9.5		32.3	2.5		9.5		12.7	8.9		9.0	15	0.7	49.9	K
9.5	34	11.5	12.2		9.2		56.6	6.1		9.5		45.9	4.3		8.7		27.2	40.4	K	9.3		2.3	35.4	B
9.1		17.2	43.6	R	9.5	43	2.4	51.7		9.5		52.5	54.8		7.0		31.0	29.4	K	8.9		17.4	58.7	K
9.4		28.2	5.0		9.4		6.4	21.2		9.3	53	3.9	42.5		9.1		43.3	6.0		8.0		31.9	43.5	K
9.4		33.5	5.1		9.5		8.5	21.9		9.3		9.0	47.4		9.5		45.2	11.5		9.2		37.5	4.8	K
9.0		45.9	41.9		9.4		20.2	5.0		8.0		24.2	59.9	K	9.4		50.6	11.9	B	9.5		39.6	43.5	
9.0		47.4	42.1		9.5		28.1	17.1		7.9		36.6	1.8	K	9.5	2	11.0	35.9		9.5	16	1.2	9.2	
9.3		55.0	59.5		9.3		39.8	39.6	K	9.2		37.9	58.3	B	9.5		19.0	54.5		9.5		30.4	48.0	
9.4		55.4	39.7		9.5		40.2	5.0		9.4		56.4	41.9		9.2		24.8	57.9		9.5	17	39.2	36.3	
9.0	35	11.2	5.6		9.5	44	25.7	42.6		9.4	54	0.0	1.1		9.2		26.3	45.9	K	9.5		48.5	12.9	
9.3		13.1	12.8		9 5		28.3	2.4		9.3		3.7	57.0	K	9.5		30.4	41.3		6.8	18	16.4	49.8	K
9.5		18.8	55.8		9.2		32.9	29.5	K	9.5		6.8	7.4		9.5		32.4	44.2		8.6		22.1	19.1	
8.8		22.3	3.8	L	9.2		44.2	37.1	B	9.5		12.4	22.5		9.5		43.9	26.6		9.4		30.5	5.9	B
9.5		32.5	16.4	B	8.5		44.7	53.8	K	9.4		14.1	14.2		9.2		55.4	57.6		9.3		36.8	42.8	K
9.3		39.6	58.5		9.0		47.8	41.7	K	9.5		20.0	34.4		8.5	4	2.2	11.7	K	9.4		40.5	6.4	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	7ᵘ	+21°			7ᵘ	+21°			7ᵘ—8ᵘ	+21°			8ᵘ	+21°			8ᵘ	+21°	
m		′		m		′		m		′		m		′		m		′	
9.5	18 51.3	2.1		8.2	32 37.5	47.5		9.5	47 49.7	34.0		9 3	3 32.7	28.5	K	9.5	18 50.7	25.8	
5.8	7.8	44.3	K	9.5	54.9	10.6		9.5	50.7	47.8		9.5	38.3	15.2		8.5	19 6.0	56.4	K
9.5	27.3	8.5		9.1	33 8.0	58.5		9.4	56.8	43.0		9.1	49.5	22.5	K	9.5	6.3	20.0	
9.3	28.1	3.6	K	9.5	12.2	13.9		7.5	48 34.8	20.7	K	9.5	55.0	31.9		6.8	41.1	38.2	K
9.4	46.8	18.3		9.5	25.8	3.0		9.5	49 0.0	1.6	B	9.5	4 8.0	31.9		9.5	20 28.8	33.5	
7.4	49.7	50.9	K	9.5	31.8	53.4		9.5	24.3	45.4		9.2	42.4	46.2		9.3	47.2	47.8	
9.0	20 7.7	58.2	K	9.5	35.9	42.1		9.4	27.2	25.5		9.4	49.8	31.0		9.5	53.8	11.6	
9.5	28.2	26.1		8.5	41.2	17.9		9.5	27.7	38.1		9.3	53.2	32.6	B	9.2	21 19.9	16.5	
9.1	35.8	12.0		9.5	52.8	26.7		9.5	47.3	58.6		9.5	5 3.6	27.8	B	9.3	24.5	13.4	
8.0	36.0	13.8	B	9.5	34 9.2	52.0		8.3	50 23.2	33.7	R	9.1	27.5	47.9		9.5	45.1	57.9	
9.1	51.9	55.5	K	9.3	39.6	14.2	K	8.5	51 1.2	15.9	K	9.5	49.7	28.5		9.5	51.2	28.5	
9.5	21 8.4	15.8		9.5	42.3	8.6		9.2	26.9	37.8	K	7.0	59.1	6.9	L	9.3	53.9	38.6	
9.5	10.5	8.6		9.5	42.7	17.5		9.5	41.5	55.0		9.4	6 11.4	3.2		8.9	54.8	19.7	L
8.1	40.7	4.9	K	9.5	35 5.3	22.8		9.0	57.2	44.8	K	9.5	17.9	50.5		9.0	22 21.0	58.2	K
9.5	49.3	19.6		9.4	40.7	0.2		9.5	52 6.0	57.9		8 4	26.1	29.4	L	9.1	30.4	6.7	L
9.1	53.9	8.9	K	9.4	36 44.1	23.7		9.5	19.8	46.6		9.5	30.4	28.0		9.5	35.1	47.2	
9.5	22 15.8	54.1		8.3	45.0	12.3		8.5	22.8	25.5	L	9.5	38.7	58.2		9.3	37.2	15.1	
9.3	28.7	14.7	K	9.5	49.6	31.5	B	9.5	32.7	4.3		9.1	7 2.1	51.6	K	9.5	39.5	52.8	B
9.2	31.0	7.0		7.5	37 33.8	28.1	L	9.5	42.8	26.4		8.8	13.2	42.7	K	9.2	39.8	41.4	
9.5	38.5	23.1		9.5	45.4	0.8		9.4	53 1.7	29.3		8.4	21.8	9.7	L	9.2	56.9	51.9	K
9.5	48.9	35.6		9.5	45.4	2.3		9.5	17.9	8.1		9.5	21.8	39.7		9.5	23 17.8	8.5	
9.5	50.6	8.1		9.5	38 23.9	52.1		9.3	28.8	59.9	R	9.3	8 10.9	26.6		9.4	44.1	15.7	B
9.4	50.9	31.9		9.0	26.4	5.5		9.5	54 16.9	53.7		7.3	16.6	40.4	K	9.5	24 41.9	3.2	
9.4	23 0.1	40.6		9.4	44.6	53.4		9.0	20.5	19.7	K	8.5	46.6	37.6	K	9.5	25 11.0	32.1	
9.4	2.8	58.2	B	9.4	52.4	4.8		9.5	20.8	28.0		8.6	9 23.8	36.9	K	9.5	54.4	1.0	
9.2	2.8	30.4	B	8.0	39 12.8	17.0	K	9.3	37.4	8.1		9.3	39.1	12.8	K	8.3	26 13.4	58.0	L
9.5	19.1	57.8		9.4	12.8	10.1		9.5	40.3	32.3		8.0	10 24.7	55.8	K	8.9	19.5	3.5	K
9.5	46.7	51.6		8.6	15.7	51.4	K	9.4	55 26.3	38.2		9.5	42.5	23.8		9.0	26.0	58.9	
8.5	48.7	24.5	K	7.9	22.8	23 8	K	9.3	28.0	43.7	B	9.0	42.7	36.8	K	9.4	39.9	9.1	B
7.1	57.8	42.4	K	8.9	36.5	35.5	K	9.3	33.1	31.1		8.2	56.4	42.4	K	9.3	40.0	53.5	
9.4	58.6	5.7	B	9.5	58.2	25.9		9.5	46.1	45.7		9.3	58.7	48.5		8.6	54.4	3.2	K
9.3	58.9	38.9	B	9.4	40 4.5	17.9		9.1	51.8	8.7		8.0	11 16.1	23.9	L	9.0	27 20.0	19.3	K
9.4	59.4	1.5		8.0	13.2	8.9	B	7.0	56.8	26.1	K	9.5	16.5	26.0		9.4	23.4	42.8	B
9.1	24 18.6	44.8	K	9.5	45.3	3.8		9.4	56 3.1	39.0		9.5	30.4	53.4		9.1	28 2.7	48.7	
9.5	33.7	2.7		9.5	41 18.4	56.5		9.5	14.3	41.5		9.5	35.8	39.7		8.8	12.5	41.6	L
8.7	25 25.4	25.5	K	9.5	42 28.3	21.9	B	9.5	18.1	6.7		9.0	48.8	25.8		9.5	29 2.5	9.4	
8.9	29.8	17.6	K	9.4	34.1	12.7		9.1	57 7.1	12.5	K	6.0	53.4	10.3	R	9.5	50.1	58.6	
8.8	47.8	55.5		9.1	45.8	11.4		9.5	18.1	28.2		9.3	54.8	54.6		9.2	30 22.3	39.5	K
9.3	26 11.5	4.3		9.4	47.3	18.8		9.4	18.2	50.9		9.3	12 4.7	19.5		9.3	34.6	17.7	K
9.0	23.0	37.5	K	9.5	59.8	3.8		9.2	19.5	12.7	K	8.8	29.6	42.4		8.6	44.8	18.3	K
9.3	34.8	34.7	K	9.5	43 4.4	32.0		9.4	32.5	42.0		9.5	38.0	11.4		9.3	31 6.2	49.1	
9.5	27 7.3	57.5		9.2	6.8	25.9		9.4	35.0	37.0		9.1	44.3	33.7		8.9	30.0	4.3	K
9.4	22.8	44.1	B	9.5	12.0	54.8		7.9	58 31.8	17.6	K	9.3	59.7	31.8		9.2	43.7	35.0	K
9.5	46.4	28.1		9.4	21.6	57.3		9.3	59 45.8	31.7		9.4	13 5.1	8.0		9.2	58.8	21.2	
9.4	28 9.4	13.0		9.5	37.2	54.2		9.5	51.4	36.5		8.9	43.3	52.8	K	9.3	32 0.7	37.6	K
8.8	26.4	28.3	K	9.2	44.6	31.8	K	9.2	0 1.1	0.9	K	9.5	47.7	22.9		9.2	16.5	44.0	K
8.5	38.4	41.4	K	9.0	51.8	38.6	K	9.4	8.8	16.4	B	9.5	14 25.7	56.8		9.5	38.6	20.4	
9.3	29 5.1	20.1	B	9.1	44 51.4	11.8	K	9.2	55.8	52.0	K	9.2	30.5	0.9	K	9.5	44.5	45.3	
9.5	27.7	11.3		9.5	45 0.2	53.2		9.0	58.8	47.5	K	9.3	15 26.3	51.0	K	9.5	33 3.8	54.7	
9.5	40.3	57.2		9.3	1.3	32.3		9.5	1 5.9	3.5		9.5	33.8	22.5		9.5	16.3	30.7	
9.1	41.0	47.1	B	9.5	2.4	17.8		9.5	17.7	40.9		9.5	45.7	36.1		9.3	17.9	11.6	K
9.1	30 2.6	59.1	K	9.3	26.5	26.5	B	9.2	26.8	7.9	B	9.5	51.7	59.5		9.5	34 26.8	59.2	
9.3	8.5	36.5		9.5	33.8	38.8		9.5	31.6	10.7		9.5	52.8	47.5		9.2	27.7	44.2	
9.1	12.0	35.6	B	7.2	40.5	28.7	K	9.5	50.0	1.1		9.5	17 8.4	2.9		9.1	31.5	20.2	K
9.4	15.5	39.4		9.1	46 13.8	12.4	K	9.5	59.6	1.8		9.0	17.9	39.2		4.5	54.1	59.4	R
9.5	36.2	7.8		9.5	47 20.7	57.2		9.4	2 17.2	2.0	B	9.5	33.3	36.8		8.7	55.5	7.9	K
9.5	45.0	13.3		9.1	27.3	46.2		9.3	17.6	15.6	B	9.5	36.2	18.0		9.2	59.7	59.8	B
9.0	52.8	9.2		9.5	32.9	1.8		9.5	23.0	3.6		9.2	18 11.9	44.4	K	9.3	35 28.3	42.5	K
9.2	31 16.9	59.1	K	8.3	44.2	10.8		9.1	24.8	11.3	K	9.4	13.5	53.7		8.5	57.3	23.8	L
9.5	32 5.1	12.4		9.0	48.3	54.3		9.5	54.8	40.7		9.0	47.8	46.9	K	9.5	36 17.9	38.2	

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	8ᵘ	+21°			8ᵘ—9ᵘ	+21°			9ᵘ	+21°			9ᵘ	+21°			9ᵘ—10ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	36 38.4	51.7		9.0	53 57.5	32.1	K	9.2	15 8.5	55.4		9.5	33 45.3	16.9		9.5	52 17.5	31.6	
9.3	51.7	31.5	K	9.4	54 8.7	49.9		9.5	16 15.0	59.4		9.5	34 6.8	56.9		9.0	53 16.4	42.6	R
9.3	37 7.4	1.0		9.5	58.4	33.4		9.3	21.1	49.8		9.5	36.9	44.6		9.5	54 34.0	5.7	
9.2	9.9	7.4	K	9.2	58.8	29.7		9.2	22.0	11.7		8.6	35 5.0	34.5	K	9.5	44.4	39.1	
9.5	13.5	30.6		8.5	55 18.6	8.3	K	9.4	44.0	5.8		9.4	28.5	0.4		9.5	55 1.3	34.0	
9.4	31.4	55.7		9.3	40.9	30.7	K	9.2	44.9	43.9		9.5	43.3	7.4		9.5	6.0	26.2	
9.3	35.5	41.6		9.5	57 13.7	32.4		9.4	17 26.2	0.2		9.4	36 1.6	45.2	B	9.5	42.0	25.4	
9.5	36.2	59.2		8.5	34.7	37.6		8.6	33.3	0.4	K	9.4	7.0	22.9		9.5	47.4	10.7	
7.0	38 0.3	8.1	K	7.5	58 26.6	4.5	K	9.5	48.9	45.8		9.5	13.3	15.7		9.5	56 12.0	50.8	
9.5	39 1.0	51.3		9.5	29.1	57.7		9.0	18 13.5	4.4	K	9.4	32.9	54.8		8.9	57 59.5	15.8	
9.5	15.9	53.7		9.0	47.2	10.0	K	9.3	19 23.2	55.4		9.4	. 41.5	32.8		9.0	58 43.4	43.7	
9.1	31.1	58.7	K	9.5	59 14.8	51.2		9.5	44.8	13.7		9.5	45.3	0.1		9.4	47.2	49.4	
9.5	40 0.6	44.1		8.8	25.6	34.9	K	8.9	20 36.5	20.4	B	9.5	37 15.6	17.1	B	8.3	59 20.4	51.9	
8.8	4.5	14.2	L	9.1	37.6	28.7	K	9.4	42.9	14.2		9.5	19.4	40.3		9.4	0 57.0	39.6	
9.5	43.4	52.6		9.5	47.2	54.2		9.4	57.4	57.7		9.0	37.1	29.7		9.1	1 7.9	58.1	
9.4	47.7	55.6	B	9.4	0 3.1	59.4	B	7.8	21 10.7	32.5	K	8.5	50.8	59.9		6.5	19.5	2.3	K
9.2	41 13.9	2.3	K	9.5	13.6	30.0		9.3	42.9	45.6		9.3	55.3	13.0		9.3	33.0	0.9	
9.3	16.6	45.2	K	9.0	20.0	56.9	K	9.3	59.8	53.0		9.5	38 0.3	20.0		7.0	2 22.4	39.2	K
9.5	18.5	16 2		9.5	21.4	11.1		9.4	22 19.3	7.7	B	8.1	2.3	29.0		6.5	3 6.9	26.1	L
9.0	25.0	28.6	S	9.5	26.6	34.3		9.3	. 21.0	3.7		7.5	6.5	9.3	K	9.1	4 21.0	37.2	
9.5	37.5	36.8		9.5	1 51.7	24.2		8.5	35.4	40.2		9.0	7.7	59.4	K	9.5	23.9	6.7	
9.5	45.6	30.1		9.1	58.2	33.5		9.5	35.8	47.4		9.4	9.0	47.6		9.0	36.5	11.5	K
9.5	46.1	36.3		9.5	2 24.6	25.2		8.8	36.3	11.3		9.3	12.5	51.2	B	9.4	5 56.4	41.0	
9.5	42 50.6	16.3		9.5	41.5	16.5		8.8	46.5	55.0	K	9.4	41.3	54.9		9.0	6 21.0	8.7	R
9.3	59.6	25.6		9.5	3 3.3	26.3		9.3	51.6	59.6		9.4	47.7	58.9		6.5	31.1	54.5	K
8.8	43 2.2	37.9	L	9.5	28.2	41.1		9.3	54.0	47.6		9.2	39 10.5	30 7		9.3	48.8	2.8	K
9.0	14.3	15.9	K	8.7	30.4	0.6	K	8.5	23 20.2	22.6	K	9.5	30.0	5.5		9.2	7 26.4	57.1	
9.3	19.6	14.9	K	8.0	4 27.2	16.2	K	9.5	30.4	24.1		7.7	34.6	16.7	K	9.5	8 7.5	0.3	
9.2	19.6	1.4	B	9.2	5 5.9	36.2	K	9.4	33.5	20.5		9.5	44.4	42.0		9.5	52.0	46.1	B
9.4	44 39.9	36.1		9.1	6.4	29.7	K	9.3	24 21.4	14.4		9.5	40 37.0	26.5		9.4	53.2	53.4	
9.4	40.8	41.0		6.5	20.0	52.7	K	8.4	21.5	24.7	K	7.8	41 27.4	29.3	K	9.5	9 44.9	34.8	B
9.5	56.6	56.1		9.5	26.6	37.0		9.2	25 12.4	15.4		9.4	41.2	59.8		8.5	11 14.4	17.0	S
9.5	45 6.0	4.4		9.1	39.7	44.2		9.4	33.3	19.6		6.9	44.1	53.3	K	8.9	20.0	41.6	
9.2	6.6	24.4		9.1	56.4	17.2		9.5	42.4	5.2		9.4	42 19.7	57.7		9.5	44.0	6.5	
9.5	14.0	33.1	B	9.1	7 4.5	37.7	B	9.5	26 5.3	33.2		9.0	45.4	29.2	K	8.2	56.2	8.3	P
9.5	19.3	44.8		9.4	18.1	2.4		9.5	27.7	21.5	B	9.5	43 21.1	26.1		9.5	12 18.5	47.0	
9.1	32.6	27.6		8.8	42.6	53.0		9.4	42.1	50.7		9.5	45 5.8	26.5		9.4	33.9	43.6	
9.5	45.1	16.5		9.5	53.7	31.2		9.5	55.9	24.6		9.5	24.9	8.3		9.5	42.8	52.1	
8.7	46 1.6	8.4		9.1	8 16.4	39.6	K	9.4	27 23.1	44.1		9.5	45.5	52.3		9.5	48.0	25.8	
9.4	4.9	56.6		9.2	21.1	39.4	K	9.5	31.0	37.8		9.2	46 20.7	6.5		9.5	13 6.9	29.2	
9.5	32.9	32.0		8.6	25.0	13.2		9.4	53.0	35.9		9.2	47 2.3	2.3	K	9.1	14 15.1	51.6	
9.5	47 15.6	9.5		8.9	25.8	26.3		9 5	28 46.4	4.6		9.4	13.4	41.3		9.4	23.7	54.6	B
9.5	48 5.4	8.7		9.1	44.3	6.3		9.3	29 9.7	52.7		9.2	22.2	4.2	K	9.5	52.0	51.1	
9.5	54.0	9.7		9.5	9 8.7	5.3		9.5	11.4	13.2		8.8	38.4	39.5	K	9.4	15 25.9	34.7	
9.0	57.6	38.6		9.4	13.3	17.6		9.1	34.3	17.6		9.4	48 0.7	58.1		9.4	54.0	23.7	
8.5	49 5.7	53.7	K	9.5	26.6	12.9		9.5	54.6	9.7		9.3	13.0	56.0	K	9.4	16 11.0	29.9	
9.0	28.8	2.2		9.5	28.4	25.2		9.5	30 11.5	27.0		9.4	31.9	44.6		9.5	26.0	6.9	
8.5	30.3	23.4	L	9.5	45.2	59.5		8.1	28.3	48.3	K	8.6	51.8	28.5	K	9.5	27.4	28.7	B
9.0	50 12.1	6.3	K	8.4	10 21.8	25.1	K	9.5	46.4	50.4		9.5	52.4	57.6		9.5	56.0	2.5	
9.5	21.8	28.0		9.2	36.3	11.7		9.0	52.2	51.3	R	8.9	49 4.4	17.8	K	9.1	17 3.0	28.5	
9.5	35.9	25.0		9.5	38.3	5.5		8.6	31 0.3	6.8	K	9.5	15.9	0.6		9.5	57.9	34.0	
7.5	37.3	43.1	K	9.4	11 2.0	54.0		7.5	2.7	52.0	K	9.4	57.0	16.5		9.2	18 2.4	5.2	B
9.5	58.2	1.7		9.5	13.2	32.5		9.5	41.5	57.9		8.5	59.5	40.5	K	8.7	16.0	1.4	L
9.5	51 7.9	58.1		7.8	26.3	9.3	K	9.5	47.4	27.5		9.5	50 17.3	0.6		9.1	35.5	3.1	
9.2	41.6	16.6	K	9.5	59.9	51.7		9.5	48.6	34.3		9.5	26.6	58.5		7.7	19 3.2	10.0	L
8.6	52 10.7	18.0	K	9.4	12 11.5	22.6		9.2	32 31.5	16.7		9.5	46.0	9.0		9.3	5.9	36.5	
9.5	31.0	44.4		8.8	17.3	2.3	K	9.5	31.7	7.8		9.4	49.2	15.5		9.1	53.3	3.5	R
9 5	53 32.6	36.9		9.0	14 10.4	37.4		8.0	37.4	40.6	K	9.0	51 9.3	5.8	K	9.5	53.7	59.7	
9.5	36.9	5.0		9.5	21.3	24.4		9.5	37.9	50.0		9.2	19.4	44.7		9.4	20 4.2	26.4	
9.5	41.4	11.7		9.4	59.6	52.4		9.5	33 12.5	51.2		9.0	58.1	56.7		9.5	21 10.0	55.0	

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	10ᵘ	+21°			10ᵘ—11ᵘ	+21°			11ᵘ	+21°			11ᵘ—12ᵘ	+21°			12ᵘ—13ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.6	22 2.9	25.2		9.4	46 41.8	39.6		9.5	19 48.7	29.8		9.0	52 58.7	33.5		9.5	32 36.5	0.8	
8.2	10.6	33.8	S	8.2	45.8	31.7	K	9.3	20 30.4	20.5		9.1	53 45.6	6.0	K	8.8	50.1	37.3	B
9.0	13.4	12.2		9.3	48 0.0	11.8		9.1	21 23.9	19.7		9.0	54 45.9	56.5	K	9.5	34 38.2	54.1	
8.8	23.2	51.7		9.3	49 9.3	58.6		9.2	22 7.0	59.3		9.2	55.1	35.5	K	9.5	52.9	5.8	
8.9	24 46.4	6.3		7.8	31.2	54.7	K	9.5	23 39.0	13.4		9.3	55 27.3	1.1		9.2	35 16.7	40.0	K
9.5	25 10.9	36.9	B	9.5	51 10.0	17.7		9.4	43.6	15.2	B	9.5	53.1	33.1		9.1	26.5	31.4	
9.5	43.0	39.6		9.4	55.7	43.9	B	9.5	24 4.0	34.5		9.5	57 16.4	50.6		9.4	27.0	47.6	
8.6	45.9	30.6	K	9.5	52 8.4	52.2		9.1	26 38.5	15.8		8.5	39.8	1.9		9.0	37.4	9.2	
9.5	53.0	32.0		9.2	27.0	34.2	K	9.4	27 4.8	35.2	B	9.0	58 6.6	48.0		9.3	38.4	24.8	B
7.5	58.1	3.1	K	8.7	53 28.1	52.1	K	9.4	11.9	11.0		9.5	37.7	58.7		9.2	36 38.9	6.2	
9.5	26 2.5	15.8		8.0	57.9	36.8	B	6.5	29.6	14.5	K	9.5	55.6	55.0		7.5	49.2	57.5	K
9.3	37.4	31.3		9.5	54 31.0	11.3		9.5	28 40.5	15.9		8.6	59 31.2	19.0	K	9.5	37 23.1	3.2	
9.5	27 2.0	38.9		9.5	55 40.0	13.8		8.5	29 10.8	52.3	K	9.2	35.4	54.1	K	9.5	39 12.0	35.5	
9.5	12.7	1.8		9.5	45.0	35.2		9.2	11.4	3.1		9.5	1 44.0	57.6		9.4	16.4	9.7	
9.5	25.2	31.6		9.5	56 19.5	2.6		9.0	14.6	19.8		9.5	3 36.2	42.0		8.0	18.2	51.3	K
8.9	29 5.0	41.9	K	8.8	19.7	40.3	K	9.5	17.5	30.0		9.2	4 29.6	11.1	K	9.5	40 43.5	40.1	B
9.5	30 15.5	36.1		9.5	46.4	12.8		9.3	41.0	8.9		9.4	36.4	21.6	B	9.1	41 5.3	40.4	B
9.2	31 15.1	53.9		9.5	48.8	29.9	B	9.5	41.0	57.2	B	6.0	46.8	21.7	K	8.0	12.6	25.2	K
9.5	32 45.0	47.5	B	8.4	57 26.1	35.2	K	9.5	30 0.8	4.5		9.5	53.3	22.2		9.2	23.9	30.7	
9.5	33 18.0	33.4		9.0	27.5	19.7		9.3	31 45.5	24.8		9.3	5 17.3	19.4		9.3	43 1.0	3.6	K
9.1	22.2	59.0		9.5	49.4	50.7		9.4	56.5	58.2		9.5	54.5	42.1		9.2	29.2	54.7	
8.6	31.8	6.3	K	7.2	59 13.4	15.9	K	7.8	33 7.9	50.6	S	9.4	8 55.0	38.6		8.9	31.7	19.7	K
7.6	34.0	18.6	K	8.3	26.8	53.6	K	8.6	34 7.0	13.1	K	9.3	10 16.9	29.3		9.5	44 51.9	22.5	
9.5	34 6.9	21.3		7.3	46.4	56.8	K	9.1	19.9	41.0	B	9.5	21.0	31.9		9.1	46 2.0	31.0	
9.5	24.0	45.5		8.3	51.9	3.3	B	8.0	35 19.3	53.2	K	9.4	34.3	43.4	B	9.1	37.4	26.1	K
9.4	47.8	56.4	B	8.8	0 3.0	11.5		8 7	33.2	3.8		9.0	40.2	13.5	K	9.2	47 24.0	42.6	B
9.5	35 15.1	7.0	B	9.4	36.1	53.9		8.0	43.9	10.0	K	9.4	11 1.0	31.6		9.5	48 17.4	25.7	
9.4	23.3	56.1	B	7.8	43.3	49.4	K	8.5	37 8.0	45.1		9.0	22.4	20.0	K	8.5	50.1	33.0	
9.5	36 17.4	41.0		8.0	46.3	51.5	K	9.5	24.9	22.7		9.4	12 0.2	57.1	B	9.3	49 0.4	28.5	
8.5	48.9	27.6	K	9.3	46.7	11.0		9.4	29.9	19.2	B	9.2	56.5	54.9	K	8 8	23.7	48.5	L
9.5	37 8.4	55.2		9.5	50.3	59.9		9.2	41.5	52.8		9.0	13 14.5	57.4	K	9.2	50 4.2	4.7	
8.5	23.6	58.5	K	8.3	1 14.1	3.3	K	9.5	42.7	37.9		9.2	54.3	50.4		9.5	19.4	14.2	
9.0	39 11.5	21.0	K	8.8	41.7	47.9	K	8.1	38 37.1	7.7	K	9.5	15 11.7	26.0		9.3	51 52.7	39.3	
9.5	19.4	21.3		9.5	52.4	48.3		8.8	39 7.7	23.8		9.3	16 1.7	53.5		9.5	52 17.9	8.4	
8.5	26.7	48.2		9.5	2 37.0	4.5		9.3	52.4	35.1		9.2	10.4	6.5	K	9.5	28.7	48.2	
8.5	28.0	33.4	K	9.3	3 1.3	4.5		9.5	40 27.0	12.8		9.4	15.8	47.2	B	9.1	53 9.4	31.2	K
9.5	40 8.6	42.8		9.1	5 49.3	22.8	K	9.0	29.7	3.2	K	9.5	19 1.7	22.8		9.1	54 9.5	53.2	K
9.3	19.8	56.6	B	2.3	6 25.6	18.6	K	4.0	31.0	2.4	K	9.3	19.6	45.3	B	9.1	43.4	21.9	
9.5	39.8	41.0	B	9.4	7 0.0	15.7	B	9.5	33.0	13.2		9.5	20.1	48.8		9.4	44.6	36.7	B
8.4	41 11.9	39.6	K	9.5	8 15.9	42.2	B	8.7	41 19.7	40.6	K	9.5	23.5	22.2		8.5	55 16.3	21.2	K
9.5	41.9	20.1	B	9.0	30.7	10.1	K	8.2	22.2	18.5	K	9.1	50.9	46.5		9.0	56 0.2	31.5	
9.2	53.6	31.6	B	9.3	10 2.2	20.7	B	9.5	48.2	40.6		7.7	20 47.7	9.7	K	9.4	10.6	1.4	B
9.5	42 3.2	26.9		9.0	27.5	13.1		9.5	42 18.2	30.3		9.5	21 1.6	34.1		8.7	30.6	19.0	K
9.2	6.0	16.0		6.8	11 56.9	30.6	K	9.0	32.7	54.8		5.8	22 25.5	42.0	K	8.8	57 46.4	21.8	
9.1	21.1	20.3	B	8.8	59.0	37.6		8.9	37.5	57.1		9.5	47.8	14.3	B	9.3	59 6.4	41.6	
9.1	43 20.9	35.8	K	8.9	12 35.0	20.0	R	8.3	38.1	5.8	K	8.0	24 2.2	1.8	K	8.8	10.5	30.6	
7.9	42.5	3.3	K	9.5	50.6	55.3	B	7.0	45 2.7	12.8	K	9.5	19.4	35.6		6.0	17.2	56.2	K
9.5	44 15.7	35.1		7.6	13 21.4	38.9	K	9.3	38.8	48.8		8.6	52.9	42.7	K	9.3	43.4	13.9	
9.4	41.0	14.1	B	9.5	14 44.5	30.7		9.5	41.9	55.8	B	8.8	25 13.5	53.9	S	9.3	0 45.8	29.9	
9.3	43.4	45.9		9.5	46.2	43.5		9.5	49.8	47.6	B	7.8	26 11.2	13.5	L	9.5	1 0.7	38.2	
9.0	45 6.9	49.6	K	9.5	15 23.5	29.4		9.0	50.8	6.9	S	8.3	27 17.1	41.1	K	9.3	11.7	32.9	
9.4	21.2	34.4		8.8	36.6	30.0	K	8.5	46 24.3	8.9	K	9.3	36.8	2.9	B	9.3	19.4	0.3	B
9.3	45.5	23.8		9.2	53.0	15.9		8.7	30.3	18.3	K	9.5	28 37.0	28.7		9.5	2 15.6	36.5	
9.5	48.8	51.4		8.0	16 51.4	24.5	K	9.3	47 18.6	49.4	K	7.7	29 34.2	0.9	K	8.2	46.1	25.7	K
9.5	46 6.1	0.9	B	9.5	17 27.5	47.6		9.3	48 39.8	3.1		9.5	50.7	37.9		9.0	4 55.7	37.5	B
8.5	7.5	17.2	K	7.8	30.7	12.8	K	9.4	51 4.3	58.3		7.3	57.1	59.8	S	8.5	5 24.0	37.0	B
9.3	8.8	19.0	R	8.0	18 36.9	11.0	K	9.4	37.6	39.7		8.8	31 0.7	14.2	K	9.2	26.5	35.9	
9.5	23.5	53.5		7.5	51.4	17.1	K	9.2	57.2	33.3		8.7	22.1	30.8	K	9.5	38.7	57.0	
9.0	35.4	45.7		9.3	53.0	49.3		8.7	52 0.1	40.1	K	5.7	54.2	52.5	K	9.3	44.6	24.6	K
9.1	38.5	29.3	K	9.5	19 48.7	29.0	B	9.4	33.2	14.5		9.2	32 2.6	49.7	K	8.8	6 7.1	46.2	K

2501—2560				2561—2620				2621—2680				2681—2740				2741—2800			
	13ᵘ		+21°		13ᵘ—14ᵘ		+21°		14ᵘ		+21°		14ᵘ—15ᵘ		+21°		15ᵘ		+21°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	6	27.2	58.6		9.5	35	6.3	42.3	9.2	4	21.5	27.7	9.3	38	16.8	42.6	8.7	8	17.5	51.9	K
8.2		39.8	11.8	K	9.5		23.4	14.2	9.5	5	5.0	4.7	8.5		41.3	41.6	K	9.5		37.9	19.5	
9.4	7	8.8	54.8	B	9.5		36.1	6.4	9.3		21.7	0.6	8.8	39	19.0	59.1		9.5	9	5.5	22.6	
9.0		32.4	3.1	K	8.1		56.0	11.9	L	9.1		24.6	47.4	9.5		28.9	8.9		9.5		7.2	48.7	
9.3		37.1	33.4		8.5	36	46.9	48.9		7.5		25.8	18.5	K	8.7		37.4	29.8	K	9.2		39.4	50.2	B
9.3	8	12.3	9.4		8.8		49.6	27.7		8.8		33.0	32.2		9.4	40	52.1	35.4		9.3		41.3	52.9	
9.0	9	31.1	56.1		9.1	37	6.7	19.0		9.1	6	40.8	53.2	K	9.0		55.6	16.2	K	9.0		47.3	32.4	K
9.1		59.5	5.8	K	9.0		26.4	36.1		9.3		59.8	32.6	B	9.4	41	4.6	52.1	B	9.1		48.7	48.7	K
8.5	10	1.4	38.4		9.4		29.0	56.6	B	8.8	7	30.4	5.9		9.0		14.3	37.4	K	8.3	10	3.3	2.5	K
8.3		59.9	46.5	K	8.0		58.8	12.1	R	8.8	8	14.2	15.6		8.0		45.4	55.6	K	9.5		32.0	40.3	
9.5	11	26.5	31.2		9.0	39	4.3	55.2		8.9		31.8	11.6		8.8		54.4	10.2		8.3		46.1	31.9	B
9.2		34.9	16.0	K	9.3		22.2	26.7		7.5	9	27.9	55.8	K	8.0	42	32.6	0.3	K	9.5	11	33.7	0.9	
9.0		43.8	43.1	K	9.3	40	25.7	13.5		8.8		48.4	45.8		9.4		47.3	1.9		9.5		40.7	5.1	B
9.3		44.9	1.2	K	9.5	41	20.8	59.0		9.0	10	25.6	43.3	K	9.5	44	42.6	38.1		9.5		48.4	20.5	
8.0	12	25.4	49.4	K	9.5		27.3	16.3		8.7		25.9	39.8	K	9.5	45	23.2	23.5		6.2		55.2	17.1	K
9.5	13	20.0	9.3		9.5		44.9	34.0		9.2	11	17.6	33.5	B	9.5		28.9	29.8		9.4	12	28.2	11.1	
9.1	15	6.0	2.6	K	9.5	42	48.0	14.2		9.2		29.7	51.3	K	9.5	46	31.3	54.6		9.5	13	4.7	4.1	
9.5		24.9	35.7		5.1		51.4	59.1	B	7.2		39.5	58.1	K	9.5	47	13.2	4.7		9.5		42.9	7.3	
7.2		25.7	27.7	K	7.5	43	30.5	58.8	K	9.5	12	2.4	12.0		9.2	48	16.3	53.1	K	8.5	14	32.2	34.8	K
9.5		51.2	49.8		7.4		33.9	59.7	K	9.3		11.3	24.9		9.0		34.8	44.3	K	9.3		41.8	0.9	
9.3		55.9	11.8		9.3		53.1	24.4	B	9.5	13	4.0	26.6		8.5	49	15.2	6.3	K	9.0		46.3	9.8	
9.3	16	18.4	57.4		8.3	44	10.0	59.3	K	9.1	14	47.3	55.0	K	9.5		56.4	19.7		9.4		56.1	32.3	B
9.2		58.7	51.4		9.5		18.5	29.1		8.2	15	50.9	11.1	K	9.5	50	1.1	47.5		9.3	15	23.9	29.7	
9.5	18	41.7	10.5		9.2	45	52.9	58.0	K	9.5		59.1	25.6		9.0		8.4	40.1	K	8.3		57.0	27.3	L
9.0		58.3	39.2	B	9.5	46	19.9	49.3		9.5	16	21.1	21.8		8.8		20.9	7.9		9.3	16	45.2	31.0	
7.5	19	11.3	34.1	K	9.0		37.6	45.8		9.3	17	3.5	23.5		9.5	51	0.0	16.2		9.3	17	55.3	6.6	
8.9		19.4	15.5		9.5		53.7	55.8		9.1		25.6	49.8	B	9.5		31.4	28.0		8.7	18	18.1	55.3	K
9.4		34.0	42.0		8.0	47	35.0	21.8	K	9.4	18	13.2	2.7		9.5		47.8	53.6		9.3		48.6	50.4	
9.4		51.6	51.1		9.5		38.5	27.5	B	7.7		46.3	16.2	B	9.3	52	21.2	53.3		9.5	19	27.3	11.6	
8.8		54.9	33.0	K	9.4		59.3	53.5		9.3		58.0	37.1		9.4	54	14.8	5.4		8.5		37.8	58.1	K
9.0	20	11.5	13.5		9.0	48	1.3	25.7		9.3	19	25.1	51.7		9.5		31.7	23.3		9.0		42.5	52.2	
8.2		19.7	1.7	K	8.6	49	52.5	21.9	K	9.0		39.2	45.1	K	9.3	55	40.1	16.0		9.0	22	14.9	22.8	
9.3		27.0	12.5		6.8	50	17.6	39.8	K	9.5	20	4.5	53.8		9.5	56	0.3	10.5	B	8.5		16.0	40.4	K
9.5		37.9	50.6		9.5	52	35.4	25.9		9.5		22.3	7.9		9.3		0.6	38.6		8.8		17.9	6.9	
9.3		52.0	49.7	B	9.5		44.9	51.3		9.2		53.0	15.5	K	8.7		11.3	1.8	K	9.3		41.4	36.3	
9.5		55.7	1.9		9.3	53	49.2	14.5	B	9.0	21	24.7	35.0	K	8.3		49.4	20.9	K	9.4	24	8.4	27.5	
9.4	21	27.6	29.3	K	9.5		59.7	55.4		8.7		31.8	19.3	K	9.5	57	32.0	44.1		8.7		40.5	49.8	K
9.5	22	1.5	56.2		7.5	55	32.0	35.0	K	7.0	22	18.6	25.2	K	9.3		29.6	16.0		9.5		51.8	58.7	
9.5		4.5	25.3		9.5	56	7.1	5.9		9.0	23	52.9	34.8	K	8.5		47.7	17.4	K	9.3	25	3.1	43.1	B
9.5		17.7	53.6		8.6		22.0	0.4		9.5	24	26.4	31.2		9.5	58	5.0	4.9		9.5		8.4	41.6	
9.3		42.6	28.6		9.5		37.9	43.3		9.3		42.2	19.7		9.4		14.9	54.0		8.2		35.3	26.8	K
9.5	23	21.8	42.7		9.5	57	23.8	27.3		9.5	25	44.9	8.1		9.4		17.0	58.7		9.5		53.5	38.7	
9.0	24	11.9	40.3	K	8.8	58	15.8	54.1	K	9.5	26	4.6	54.4		9.5		39.7	57.7		8.5	26	13.9	33.1	K
9.0		59.8	42.7		9.3	59	7.4	7.0		9.4	28	48.7	11.1	B	9.3	59	40.2	34.5		9.5		34.7	52.9	
8.0	25	31.0	37.8	K	9.0		19.0	0.1		9.2	29	3.5	4.5	K	9.5		59.0	59.5		8.9	27	14.3	43.2	K
9.5	26	22.6	12.4		9.4	0	16.3	26.3	B	9.3	31	43.4	6.5		8.4	1	25.1	58.4	K	9.5		18.6	52.5	
7.5	27	45.0	23.3	K	9.4		45.7	58.3		9.5	32	2.0	51.0		8.0		39.1	38.5	K	9.1		33.1	26.2	
7.8	28	14.4	32.6	K	9.5		48.2	16.2		9.5		5.8	38.8		8.5		51.1	37.2	K	9.2		58.8	45.6	B
8.5		22.5	21.5	K	9.2	1	5.0	6.5	K	9.5		27.2	51.4		8.7	2	7.2	24.0	R	9.5	30	4.3	12.7	
9.1		41.1	51.6		8.2		9.5	7.3	K	9.5	33	7.7	22.5		9.3	3	11.2	24.0		9.2		18.0	4.8	
9.3		59.8	53.3		9.4		12.1	30.4		9.5		30.5	29.1		9.3		26.1	43.5		9.3		39.0	12.8	B
9.0	29	3.3	26.0	K	8.5		19.9	14.6	K	9.5		38.4	28.4		9.5		52.4	52.8		9.0	31	16.4	37.6	K
9.3		13.4	23.5		8.0		29.9	52.7	S	9.1	35	10.8	3.0	B	9.0	5	31.3	40.3		9.2		25.3	7.1	
9.5	30	16.1	33.0		9.5		57.8	29.4		6.5		18.1	45.4	K	9.1	6	4.7	13.9		7.7		28.5	54.9	K
8.3		29.9	14.2	K	9.5	2	14.7	31.5		9.5		37.8	52.3	B	9.3		41.5	39.0		9.0	32	17.4	49.1	K
9.5	31	37.3	25.3		9.5		37.0	55.0		7.8		48.0	55.6	K	8.8		54.4	31.7	K	9.4		40.1	43.0	B
8.8	32	40.0	37.4		9.5		42.8	27.6		8.0		56.9	6.0	K	9.5	7	12.6	37.3		8.6		59.4	50.8	K
9.3		58.0	56.1		7.7		46.9	9.8	K	8.6	36	12.9	58.6	K	9.5		15.5	28.4		9.0	33	23.9	45.6	
9.1	33	8.3	41.7	K	9.5	3	1.3	59.5		9.3		17.5	16.2		8.3		45.6	7.1	K	9.5		33.1	56.5	
9.3		58.9	22.3		9.1		50.0	22.8		8.9		23.1	5.9		9.5	8	7.2	13.9		8.5		35.2	38.7	K

2801—2860				2861—2920				2921—2980				2981—3040				3041—3100			
	15ᵘ	+21°			15ᵘ—16ᵘ	+21°			16ᵘ	+21°			16ᵘ	+21°			16ᵘ—17ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	33 49.8	25.6		9.5	53 24.9	42.4		9.5	20 5.3	15.6		9.2	39 20.3	37.4	K	9.2	58 49.6	24.1	
8.0	34 0.2	50.1	K	9.5	38.9	47.6		9.3	36.0	48.5		8.9	36.8	54.0	K	9.0	51.2	20.0	
9.5	58.3	51.5		9.5	54 4.3	55.6		9.4	21 5.1	36.7		9.4	40 20.0	58.9		9.4	59 6.9	56.6	
9.5	35 18.6	19.3		9.4	55 16.0	24.4		8.0	9.0	32.9	K	9.5	24.2	12.9		9.5	11.1	48.3	
8.3	36 6.2	4.0	K	9.5	31.1	38.0	B	8.2	25.6	9.1	K	8.7	32.6	6.8	K	8.0	15.8	41.4	R
9.2	7.3	22.5		9.5	32.0	15.0		8.2	27.0	12.8	K	9.0	59.3	49.1	K	8.7	16.0	31.1	L
9.5	37 33.0	43.2		8.2	45.4	17.6	B	9.1	35.5	37.4		9.2	41 0.8	56.0	K	9.0	29.9	13.8	
9.4	45.7	15.1		9.5	56 20.0	31.4		7.9	39.8	58.7	B	9.4	0.9	39.8		9.0	0 8.9	54.3	
9.5	54.9	58.7	B	9.5	22.8	40.5		9.5	22 25.7	55.5		9.2	42.8	57.4		9.2	9.2	16.0	
9.4	38 10.2	6.8		9.4	59 7.6	24.3		9.5	36.5	21.9		9.5	42 17.0	1.1		9.0	12.6	46.0	
8.9	18.6	41.7	K	8.5	36.1	36.6	K	9.4	36.7	55.0		8.5	20.8	39.1	K	9.5	28.9	25.9	
7.0	33.3	19.6	K	9.5	0 9.2	5.1		9.4	39.4	45.7		9.5	43 2.9	28.0		8.9	1 9.9	53.9	
7.0	33.7	54.4	K	9.0	23.1	47.1	K	9.5	23 27.2	12.4		8.1	38.1	54.9	K	8.2	59.0	11.0	K
9.3	42.4	52.4		9.4	1 7.4	25.0		2.5	59.8	49.3	K	9.4	44 16.3	22.2		9.3	2 11.9	28.7	
9.3	44.9	38.3		8.0	2 24.4	27.4	K	9.3	25 0.2	8.7		9.5	57.2	39.6		9.5	32.7	31.1	
8.5	39 7.8	37.3	K	9.2	42.2	0.8		9.0	26 6.4	25.0		9.5	45 32.9	43.9		9.5	50.3	37.0	
9.5	25.9	32.8		9.4	3 55.7	4.1	B	9.5	14.1	56.8		7.8	46 26.6	13.2	K	9.5	56.9	48.4	
9.2	40 2.3	49.4	K	8.9	56.8	48.1	K	9.5	17.0	4.5		9.3	38.6	3.1		9.5	4 3.6	39.5	
9.0	41 10.7	44.6	K	8.7	4 1.1	30.9	K	9.0	24.3	47.4	K	8.0	47 30.6	25.6	K	7.8	18.7	23.9	B
9.5	51.3	59.4	B	8.9	23.9	6.0	K	8.5	25.6	35.0		9.5	30.9	45.1	B	9.5	42.6	29.4	
8.8	42 2.1	0.1	K	9.5	33.4	43.3		9.1	57.4	2.8		9.1	48 5.8	46.3		9.3	54.7	15.8	B
9.3	35.3	40.3		8.3	5 6.4	18.4	K	9.5	27 47.8	59.9		6.0	40.1	13.1	K	9.4	5 20.2	15.1	
9.1	43 0.2	40.3		9.0	22.8	2.4	K	9.0	28 6.6	34.6	K	9.5	49.4	3.3		7.5	54.0	24.6	S
9.4	9.4	53.8	B	9.5	46.4	8.0		9.5	29.2	5.8		8.6	53.3	35.0	K	9.3	6 1.0	48.1	
9.0	22.8	10.5		8.3	6 34.7	54.7	K	9.5	29 14.7	54.0		7.8	49 8.4	43.5	K	9.4	17.8	9.5	
9.3	44 3.8	0.9		6.8	51.9	56.1	K	9.0	21.3	36.7		9.3	27.2	6.1		9.0	21.7	24.5	K
8.0	6.4	41.4	K	9.5	7 0.0	37.4		9.5	23.7	9.1		9.5	50 4.9	32.5		8.5	25.2	17.3	K
9.0	45.4	54.2	K	9.0	11.1	32.2	K	9.5	57.2	6.5		9.5	17.3	1.4		9.5	47.1	58.2	B
9.0	54.6	25.5	K	9.4	33.1	7.9		8.3	30 3.0	3.1	P	8.8	42.3	43.0	K	9.2	7 7.4	29.0	B
9.5	45 9.9	47.0		9.5	8 23.5	1.2		8.6	10.9	6.9	K	9.4	51 3.3	39.5		6.5	29.2	37.4	K
9.5	14.0	54.3		9.3	27.4	17.3		9.1	31 18.4	20.8		9.5	5.4	2.4		8.5	40.2	1.1	
9.4	29.9	46.3		8.8	50.2	24.3	K	9.5	26.9	47.1		9.4	17.0	8.0		9.4	47.9	30.2	
9.3	34.7	54.0		8.5	9 18.4	48.3	K	9.1	54.8	13.2		8.7	22.6	13.6	K	9.3	8 16.2	54.9	
8.5	57.4	59.2	K	9.5	36.6	2.8		8.2	32 19.4	49.2	K	9.5	52 0.0	34.6		9.5	21.0	43.6	
9.3	46 6.9	11.0		9.0	10 53.7	35.4	K	7.7	48.7	57.9	K	9.3	5.8	53.7		9.4	51.2	43.6	
9.3	16.5	30.0		9.0	11 10.1	18.0		9.2	57.7	35.7		9.2	15.3	59.7		8.6	59.9	44.2	K
9.2	25.3	4.8		8.0	12 5.1	23.6	K	8.8	57.9	25.6	K	9.3	29.7	33.9	K	9.5	9 4.2	49.8	
8.8	52.3	18.5	K	9.3	34.9	11.8		9.3	33 16.8	26.0		9.5	30.8	54.0		9.5	40.9	7.1	
9.3	47 8.2	35.9		9.1	36.1	22.9		8.2	37.6	31.5	K	9.4	33.2	4.5		9.4	10 30.9	32.8	B
9.5	14.3	10.6		9.5	56.0	26.3		9.5	37.9	40.1		9.5	53 28.6	3.9		9.5	33.9	42.5	
9.3	47.0	45.2		9.0	13 46.1	13.5		9.5	34 13.4	17.0		9.3	54 19.4	42.0	K	9.5	36.2	12.5	
9.3	48 2.4	59.0		6.5	48.4	29.1	K	8.5	14.3	47.7	K	7.3	55.4	43.4	K	9.0	46.0	51.2	
8.8	9.3	39.7		9.5	15 3.1	51.9		9.3	16.4	25.6	K	9.5	55 29.8	2.3		9.5	11 4.2	53.6	
9.5	27.8	6.1		8.5	4.7	43.5	K	9.5	35 17.0	47.1		9.3	30.3	36.5	K	8.7	4.5	22.4	K
9.4	37.9	20.7		9.5	22.9	7.2		9.2	22.7	9.6	K	9.5	36.6	34.2		9.4	24.8	26.5	
8.2	42.3	59.7	K	9.5	24.2	30.5		8.7	29.5	18.1	K	9.5	56 9.0	26.7		9.2	42.5	1.7	K
9.3	49 13.9	45.6		8.2	26.4	59.8	K	9.5	31.3	23.4	B	9.2	11.4	2.6		9.5	12 6.9	21.5	
9.1	15.7	16.0	B	9.5	50.1	4.9		9.5	56.9	7.2		9.5	22.4	1.0		9.2	26.5	32.5	K
9.3	49.6	45.4		8.5	16 3.7	46.3		9.5	36 0.6	59.2		9.1	38.5	36.3	B	8.1	30.9	55.9	K
9.2	53.0	49.1	B	9.0	5.1	18.0		7.3	14.4	51.2	L	9.4	50.6	15.9		9.4	33.9	56.0	
8.2	50 6.2	41.4	K	9.5	54.7	24.0		9.5	23.2	51.5		7.5	53.5	46.9	L	9.5	13 3.6	4.1	
9.2	35.8	1.6	K	9.2	17 6.8	4.9	K	9.1	24.6	11.6		9.3	57 0.6	30.3		9.4	9.6	48.1	
9.3	51 7.5	18.2		8.2	17.8	23.6	K	8.6	32.2	56.0	L	9.5	1.9	35.8		9.5	24.6	20.8	
9.1	21.4	22.9		9.5	24.1	6.9	B	9.5	37 18.4	16.7		9.5	13.9	20.0		9.5	40.5	48.8	
8.9	25.5	19.1	B	8.8	18 20.4	9.7	K	8.9	23.1	51.0	B	8.7	45.4	5.4	K	9.1	52.9	34.6	
8.6	47.7	49.0	K	9.1	24.1	41.5		8.2	27.9	51.2	K	9.5	58 7.6	34.6		9.5	14 8.3	12.3	
9.3	52 29.3	36.9		9.3	36.2	23.5	B	9.5	55.3	39.8		8.2	10.5	53.6	K	9.5	13.8	2.0	
9.4	53 0.7	29.7	B	9.5	49.9	55.1		9.1	38 23.4	1.0		9.3	16.9	45.0		9.1	19.5	11.8	
9.2	9.4	36.9	K	9.3	19 10.4	9.3		9.4	29.2	54.4		9.0	20.9	57.4	K	9.4	27.2	13.1	
9.5	11.6	24.7		9.2	14.7	14.3	B	9.0	47.0	9.6		9.1	32.0	20.8		7.2	35.9	41.9	K

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ᵘ	+21°			17ᵘ	+21°			17ᵘ	+21°			17ᵘ—18ᵘ	+21°			18ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	14 50.3	51.9		9.5	30 48.5	53.9		9.1	42 23.1	11.3		9.0	55 36.5	17.7		9.5	5 41.0	30.2	B
9.5	15 9.4	3.1		9.5	31 1.6	37.6		8.0	28.1	8.3	K	9.1	44.5	56.0		9.4	47.8	25.2	
7.0	51.2	17.7	K	8.5	2.7	10.3	K	9.5	53.4	0.6		9.2	49.8	0.0		9.5	6 12.9	27.3	
9.4	55.3	21.2	B	9.2	6.6	52.8		9.5	54.6	25.6		9.5	56.3	17.7		8.7	17.0	42.1	K
8.8	56.7	55.4		9.4	8.2	31.0		9.3	43 2.8	16.3		9.0	56 9.1	52.5		9.3	21.8	49.2	
9.5	16 3.5	6.1		9.5	15.8	34.9		8.8	9.1	23.3		9.1	15.9	40.4		9.5	28.9	58.9	
8.7	12.2	5.2	K	8.5	16.7	14.3	K	9.5	34.9	50.6		9.5	18.6	1.5		7.0	7 7.5	50.8	R
8.7	20.0	10.7	K	9.5	21.6	5.6		8.3	39.2	26.2	K	9.5	53.7	33.2		8.8	13.4	9.5	
9.0	20.6	5.5		9.5	34.6	52.1		9.5	44 5.8	50.4		9.5	57 9.6	32.5		9.5	34.3	36.5	
9.3	17 13.1	23.5		7.8	56.1	2.0	L	9.5	32.6	47.6		9.5	37.5	3.1		9.5	38.1	38.8	
9.1	28.3	42.9		9.2	56.5	34.8		9.3	54.6	35.6		9.5	58 4.7	29.0		9.5	40.6	48.9	
9.1	51.9	33.9		9.4	32 18.4	2.5		8.6	45 12.6	8.1	L	8.8	24.7	43.3	K	9.5	49.3	39.5	
9.5	18 28.2	47.0		9.1	21.3	18.8		9.2	15.6	12.2		9.3	25.0	0.4		9.2	8 1.9	24.4	
9.3	36.0	2.9		9.5	37.5	40.0		9.5	26.3	29.8		9.2	34.2	55.3		9.5	7.3	53.1	
9.1	50.2	21.1		8.5	39.7	19.9	L	9.1	27.1	52.3		9.4	46.0	1.3		8.9	14.4	25.1	K
9.5	55.8	9.1		9.0	52.7	10.1		9.3	41.4	2.5		8.2	50.6	26.9	K	9.3	15.4	24.8	
9.5	19 15.2	22.1		9.3	53.2	30.7		9.5	46 27.5	43.3		9.5	57.4	13.5		9.3	24.3	29.2	
9.4	54.3	1.0	B	9.4	33 7.7	20.6		9.5	34.4	49.6		9.2	59 4.7	34.7		9.2	33.9	3.7	
9.3	56.9	7.9		9.0	15.2	30.6		9.0	42.9	34.5		9.5	13.1	28.0		9.5	37.1	12.0	
9.2	57.5	58.4		9.0	22.2	50.3		9.3	56.0	27.5		7.5	21.1	38.4	K	9.2	50.8	34.4	
9.0	57.9	28.0		9.5	41.1	41.6		9.5	47 9.8	57.0		7.7	35.6	25.6	K	8.3	52.9	50.4	K
9.5	20 11.5	4.2		8.3	46.2	47.6	K	9.4	10.4	10.0		7.5	42.1	26.3	K	9.4	54.8	35.4	
9.0	19.7	33.2	K	9.5	59.1	57.4		8.3	19.3	4.8	K	9.5	56.6	22.8		9.1	9 3.7	45.1	B
8.1	57.1	50.7	K	9.5	34 14.1	47.3		9.1	21.8	57.0		9.5	58.0	26.0		9.5	18.6	17.5	
9.4	58.0	7.1		9.5	35 8.0	11.4		8.7	23.0	20.2	K	9.2	0 24.7	52.8		9.5	32.9	39.5	
9.5	21 6.8	6.7		9.4	23.0	15.9		8.5	48 11.2	3.2	L	9.5	34.6	28.5	B	9.5	54.8	32.3	
9.0	20.0	28.0	K	9.5	31.5	47.6		9.0	30.1	2.0		8.5	38.8	0.0	K	9.5	57.1	36.7	
9.3	32.3	39.5		7.5	41.6	36.3	K	9.0	50.6	17.0	K	8.0	55.0	45.8	K	9.5	10 18.3	53.4	
9.4	49.5	47.3		8.1	45.7	11.5	S	8.1	55.6	38.0	K	9.2	1 13.5	42.7	B	8.8	31.4	19.6	
9.5	54.0	14.6		8.5	46.0	0.6		9.3	49 22.9	5.2		9.5	15.5	4.8		9.5	53.7	8.3	B
9.4	22 4.7	18.6	B	8.7	51.7	31.1	K	9.5	29.1	18.7		9.5	23.6	41.5		8.6	58.0	51.5	K
9.5	6.2	23.2		9.3	52.2	37.0		9.5	55.8	7.8		9.4	24.9	36.7		9.1	11 0.4	8.8	B
8.8	9.1	31.3		8.5	56.6	5.6		8.0	59.7	30.0	K	9.5	45.1	53.0		9.3	8.5	3.3	
8.4	21.9	48.1	K	9.5	36 11.8	58.6		9.3	50 1.0	6.8		9.5	46.1	4.0		9.0	14.2	18.0	B
9.4	25.8	23.1		9.5	42.1	43.2		9.5	6.2	7.8		9.5	57.4	32.9		9.0	17.2	54.5	K
9.5	59.6	57.4		9.3	42.6	22.5		9.0	16.6	6.3		9.5	59.5	25.7		9.0	21.2	28.8	B
9.5	23 44.7	53.9		9.5	56.6	56.8		9.0	22.2	0.2	B	9.5	2 10.7	31.0		8.5	46.9	11.6	K
9.4	48.8	43.5		7.5	37 9.0	42.2	K	9.5	37.4	2.5		9.5	46.0	37.6		8.2	49.8	56.7	K
9.5	24 10.2	18.5		9.5	17.6	11.5		9.5	46.6	5.3		8.5	47.3	57.3		9.5	12 10.9	5.1	
9.5	42.2	2.4	B	8.7	19.0	44.2	K	8.5	51 5.6	21.2	K	9.1	53.1	21.7	B	9.5	31.7	54.2	
9.5	45.4	43.2		9.5	57.9	1.5		9.5	7.0	26.3		9.5	58.7	6.5		8.5	43.5	4.8	
8.8	52.8	56.4	K	9.5	38 3.1	33.2		9.5	11.1	25.3		9.4	3 3.4	28.5		9.3	49.9	6.1	
8.1	55.1	8.7	L	8.7	5.7	54.4	K	9.1	14.1	11.5		8.7	20.3	7.5	K	9.1	52.3	33.8	
9.3	25 21.4	51.0		9.4	39 0.8	10.8		9.2	16.3	54.6		9.1	32.5	14.2		9.5	13 20.4	22.4	
9.5	35.3	0.0		9.4	8.1	57.4		9.2	21.7	11.5		8.0	35.5	19.5	B	9.5	25.8	29.3	
8.2	26 1.7	22.8	K	9.5	28.1	11.1		8.6	24.3	43.6		9.4	46.5	25.1		8.8	52.2	19.9	
9.5	41.4	12.6		9.4	28.4	3.4		9.5	25.0	31.8		9.5	58.3	43.0		9.0	55.0	21.3	
9.5	42.0	50.3		8.0	46.5	56.4	K	9.5	35.2	31.0		8.5	4 25.4	0.4	K	7.6	14 7.0	0.8	B
9.5	42.2	45.4		9.0	47.5	56.3		8.2	56.6	20.3	K	9.1	26.9	9.9		8.6	8.3	18.1	
8.7	45.5	58.6	K	9.4	52.0	59.9		9.0	52 13.5	9.8		9.5	31.1	14.8		6.0	10.7	54.2	K
9.3	27 13.6	53.7		9.5	40 13.2	9.0		9.5	19.1	29.1		9.4	36.6	19.6		9.4	30.5	56.7	
9.1	25.6	26.9		8.5	20.3	45.7	K	9.5	53 0.4	43.9		9.5	41.7	32.0		9.1	32.2	12.0	
7.8	46.0	40.6	K	8.9	31.1	33.5	K	9.5	30.6	11.8		9.3	44.9	34.7		9.4	41.7	53.9	
9.3	55.9	57.7		9.5	31.1	15.9		8.6	54 9.7	54.2		9.5	5 1.0	59.4		8.9	50.8	57.1	K
9.5	29 5.6	59.8		9.5	32.1	18.0		9.5	10.1	58.0		9.4	10.8	44.8	B	9.5	15 1.6	41.6	
9.5	17.2	43.6		9.5	54.9	2.5		9.0	13.1	11.5		9.0	16.6	4.6	K	9.4	2.1	45.8	
6.0	47.5	5.7	K	9.5	41 4.6	52.9		9.0	55 3.2	16.0		9.5	22.0	28.7		9.5	19.4	53.1	B
9.0	51.7	11.2	K	9.5	38.1	12.7		9.2	3.5	41.1	R	9.4	27.4	31.5		9.5	29.5	39.4	
9.5	30 6.7	41.0		9.0	40.3	8.8		9.5	15.0	23.6		9.5	31.9	57.4		8.8	34.3	17.7	K
9.5	23.8	25.8		9.5	42 11.0	58.8		4.2	24.7	36.7	S	9.2	34.4	53.2		7.5	39.4	26.3	K

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵐ	+21°			18ᵐ	+21°			18ᵐ	+21°			18ᵐ	+21°			18ᵐ—19ᵐ	+21°	
m		′		m		′		m		′		m		′		m		′	
9.5	15′ 41.8″	56.7		9.5	24′ 32.4″	30.9		9.5	34′ 57.8″	2.6	B	9.5	45′ 59.0″	31.0		9.5	56′ 40.2″	55.3	
8.2	51.0	12.0	K	9.1	39.2	8.7	K	9.5	35 25.3	17.0		5.5	46 4.8	15.5	K	9.5	44.0	28.5	
9.5	16 20.5	32.3		9.4	47.1	16.1		9.5	47.6	41.1	B	9.0	16.8	12.8		9.4	48.8	5.9	
9.5	21.1	45.4		8.8	48.3	23.3	K	9.5	49.9	59.9		9.5	29.2	51.6		9.3	53.1	48.9	
9.2	34.7	52.3		8.0	50.5	33.2	K	9.4	53.4	46.0		9.4	31.8	8.1	K	9.5	59.8	15.2	
9.3	49.5	36.5		9.1	58.7	51.0		9.3	36 6.2	12.6		9.4	32.6	58.4		9.4	57 10.0	32.8	
9.5	17 0.0	11.7		9.5	25 6.1	10.9		9.5	25.4	28.7		7.8	44.8	16.9	K	9.2	12.9	24.4	
9.4	19.6	8.0		9.5	6.5	40.7		9.2	32.8	20.8		9.1	45.3	59.7	B	6.7	28.8	3.4	K
9.2	20.4	25.7		9.5	34.6	4.6		9.5	45.7	42 7	B	9.1	47 4.7	2.9	K	9.6	39.9	1.3	
9.4	25.9	13.2	B	7.8	36.6	48.3	K	9.4	56.2	22.9	B	9.2	22.1	23.4	K	8.9	57.9	0.8	K
4.5	30.6	42.1	K	9.4	26 14.5	37.2		7.7	56.4	24.7	L	9.5	23.2	54.7		9.5	58 1.1	53.0	
9.3	47.3	38.6	B	9.4	18.7	53.5		9.2	58.7	53.6		9.5	23.7	57.7		9.5	23.0	28.8	
9.4	18 2.5	44.3		9.1	52.3	22.1		9.3	37 0.2	12.1	L	9.5	47.8	2.5		7.8	23.8	15.5	K
9.5	7.3	39.3		9.5	27 9.0	18.7		9.5	0.7	55.6		9.5	55.8	1.7		7.7	26.1	52.8	R
9.3	28.0	2.7		8.9	17.7	54.0		9.3	10.9	32.7		9.4	59.5	5.0		9.4	35.9	19.7	
9.0	32.1	6.0	K	9.0	25.7	50.5		9.2	13.2	31.7	B	9.5	48 2.1	46.1		9.5	42.2	57.0	
9.4	40.4	23.8		8.2	45.6	43.1	K	9.5	30.2	7.7		9.5	7.0	33.4		7.7	45.7	1.1	K
9.4	42.5	51.4	B	9.0	53.0	5.1	K	9.5	53.2	7.7		9.4	14.8	32.8	B	9.5	59 40.8	4.9	
7.7	43.2	7.3	K	9.3	55.4	27.0		9.5	38 2.2	13.4		9.5	54.9	0.2		9.0	56.1	42.2	
9.5	47.6	55.9		9.3	28 9.1	6.0		9.5	4.7	10.2		9.3	49 7.5	3.4		9.4	0 2.4	52.5	
9.5	19 3.4	28.1		7.9	21.0	4.0	K	9.3	31.4	23.4		9.3	11.1	47.4		8.9	7.8	16.5	
9.5	9.2	11.6		9.5	26.4	30.9		9.3	37.6	48.2		9.3	24.7	4.9	B	9.3	9.7	25.3	
9.5	9.7	13.0		7.5	36.6	22.5	B	9.5	41.0	59.3	B	9.3	27.0	36.5		8.8	11.8	9.0	
9.5	12.5	59.9		8.3	38.1	43.3	K	9.5	49.2	13.8		9.5	37.0	24.2		9.1	32.8	53.8	
8.1	20.8	57.0	K	9.5	59.8	35.4		9.4	53.3	16.3		9.4	39.0	25.7		9.5	33.7	21.2	
9.0	40.0	59.6	B	9.0	29 6.6	43.8		9.3	54.3	36.1	B	9.5	41.2	24.8		7.2	43.2	57.5	K
8.5	47.4	31.3	K	9.3	9.4	11.8	B	9.5	39 2.7	51.6		9.5	43.1	19.0		9.2	1 25.3	1.8	B
9.5	50.1	32.2		8.7	9.5	36.6		9.5	11.4	2.7		9.2	50 0.5	3.0		9.5	28.4	36.5	
9.2	59.7	48.6		9.4	11.5	11.0		9.5	26.2	5.8	B	9.5	0.9	28.1		9.5	33.0	6.0	
9.5	20 0.2	55.4		8.9	19.6	35.8		6.9	26.6	50.2	K	9.5	4.9	21.5		9.3	38.1	2.0	
9.0	17.6	48.8	B	9.5	59.4	30.9		9.2	40.1	5.3		9.3	11.0	39.4		9.5	42.9	53.8	
9.2	21.8	6.0	B	8.8	30 7.5	35.8		9.4	40.6	50.4	B	8.5	23.0	38.0		6.2	50.9	28.1	K
8.7	22.1	42.3		9.1	15.8	57.5		9.3	40 10.7	4.1	B	9.5	23.4	17.7		9.5	56.6	13.0	
9.2	28.8	56.6		6.9	28.8	59.1	K	9.2	41 12.1	5.9	K	9.5	26.1	43.6		7.7	57.5	33.0	K
9.3	55.3	21.0		8.5	38.2	13.0		9.5	43.0	29.8	B	8.0	27.8	11.0	K	9.3	2 11.0	56.0	
9.5	21 4.3	18.3		9.5	48.5	2.4		9.4	42 6.2	4.4	B	9.4	32.8	8.0		9.5	43.4	8.7	
9.5	16.6	45.9		9.5	49.8	14.7		9.5	7.2	6.0		9.5	38.5	58.6		9.3	43.9	16.9	
8.7	29.6	43.0	R	9.0	31 13.6	44.1		9.5	7.5	27.1		9.0	51 8.1	51.2	K	9.5	3 24.0	42.9	
8.3	29.8	22.3	K	9.5	26.7	50.8		9.5	30.4	31.1		8.8	13.9	17.1		9.5	4 1.5	53.0	
9.5	30.0	15.6		8.5	30.3	23.6		7.1	44.9	0.4	K	9.3	16.0	40.3		9.5	3.6	43.7	
9.5	50.3	53.2		9.5	30.9	0.4		9.5	49.3	12.7		9.5	30.7	2.3		9.5	22.2	56.8	
9.5	57.5	38.4		9.3	38.6	43.4		9.5	43 3.0	19.9	B	9.5	35.1	47.7		9.3	22.7	54.1	
9.5	22 4.0	13.3		9.3	50.8	59.1		8.8	10.2	9.0		9.5	44.8	2.3		8.0	33.3	2.2	K
9.5	17.5	37.9		9.5	32 20.1	1.6		9.4	32.7	56.1		9.1	52 6.8	3.3		9.5	5 1.0	4.7	
9.0	20.7	50.5		9.5	20.6	3.8		8.8	35.2	14.6	K	8.5	9.9	28.2	K	9.5	3.5	23.0	
9.3	29.2	11.2		9.0	49.2	7.8		9.5	42.0	26.1		8.6	13.1	53.1	K	7.6	8.3	1.2	K
9.5	29.7	13.7		9.5	33 1.9	15.1		9.2	45.7	56.1	R	9.5	21.0	40.3		9.5	22.0	38.3	
9.5	31.5	33.7		9.5	2.4	23.3		9.1	48.6	41.3		9.5	38.2	59.9		8.8	46.1	53.4	R
9.2	37.9	3.5		9.5	2.7	50.3		9.3	44 19.9	6.8	B	9.4	53 17.9	23.3		9.4	6 24.2	59.9	
9.0	46.7	50.5		9.5	18.9	5.3	B	9.3	25.4	8.0		8.6	32.0	27.7	K	6.0	25.0	18.2	K
8.9	23 8.6	43.1		9.5	23.1	3.7		8.9	32.6	41.9	K	8.2	59.8	13.9	K	8.7	29.3	53.4	
9.3	16.3	18.1		9.5	50.7	51.7		9.5	42.3	38.9		9.4	54 53.1	52.4		9.1	35.1	43.8	
9.3	19.4	28.4		9.5	50.9	29.0		9.5	55.0	49.9		9.5	55 5.0	1.2		9.5	45.4	10.8	
9.5	37.3	44.9		9.5	58.8	0.7		9.1	56.7	37.4	B	6.7	5.9	18.3	R	8.8	46.3	15.7	
9.3	38.8	50.6	B	8.5	34 4.3	16.7	K	8.9	45 1.0	37.5	B	8.9	41.2	55.0		8.2	56.0	39.9	
8.0	43.7	55.3	K	9.5	23.5	40.0		8.9	4.3	43.8		9.5	49.2	57.5		9.5	7 6.2	35.2	
8.0	49.4	25.9	K	9.5	27.6	45.7		9.5	18.7	6.8	B	9.5	56 2.1	49.8		9.5	29.8	13.5	
9.3	58.5	35.9		8.8	40.5	33.8	K	9.5	44.1	32.6		9.0	21.9	18.4		9.5	34.1	16.2	
7.8	24 7.6	46.0	K	9.5	50.9	47.2		9.5	52.2	59.9		8.8	30.0	32.8	K	9.4	40.4	49.6	
9.5	10.4	30.7		9.2	53.3	21.4		9.3	57.3	8.8		9.4	31.0	29.6		9.3	41.6	46.1	

3701—3760				3761—3820				3821—3880				3881—3940				3941—4000			
	19u	+21°			19u	+21°			19u	+21°			19u	+21°			19u	+21°	
m				m				m				m				m			
9.5	7 54.0	38.6	B	9.5	17 6.1	48.1		9.3	26 57.9	21.0		9.0	36 11.5	34.5		7.3	44 25.5	44.7	L
9.4	54.5	8.8		9.3	34.1	36.3		6.8	27 11.2	32.4	K	9.5	23.9	51.0		9.5	35.4	20.5	
9.4	55.0	45.6	B	9.5	35.2	41.4		9.3	14.5	50.7		9.4	34.0	44.5		8.6	45.1	52.5	
9.5	8 1.3	45.6		8.8	46.2	59.8		9.5	30.0	23.8		9.5	36.9	23.7		9.4	50.3	19.3	B
9.5	12.1	23.9		9.1	49.3	45.4	B	9.0	30.9	12.1	K	8.1	50.5	57.8	L	9.5	45 0.2	3.6	
9.5	20.9	27.6		8.3	57.9	20.8	K	8.7	44.1	40.5	K	9.2	55.2	18.1	B	8.6	4.1	51.9	
9.2	30.8	7.4		9.1	18 3.5	20.2	B	8.2	47.6	42.4	K	9.4	57.1	7.7		9.4	16.4	24.5	
9.2	37.0	44.9		8.3	17.8	14.1	K	9.4	50.5	25.7		8.7	57.5	4.3	B	9.4	16.4	58.0	B
9.5	38.0	19.5		8.1	28.7	55.5	K	8.8	28 6.4	24.0	R	9.4	37 1.7	55.3	B	8.0	17.7	55.0	L
9.4	9 11.9	23.7		9.4	36.3	9.6		9.2	10.9	27.8		9.5	7.1	55.6	B	8.0	20.6	47.3	L
9.3	51.3	14.6		9.5	38.9	22.9		8.5	13.0	30.0	R	9.5	11.9	7.0		9.3	29.1	21.7	B
9.2	53.8	28.1		9.0	52.7	33.0		9.2	14.0	37.7	B	9.5	31.8	33.0		9.5	57.2	50.3	
4.7	59.8	8.2	K	8.5	55.2	55.7	K	9.4	17.8	41.2		9.5	32.7	23.3		8.3	57.7	40.1	L
9.5	10 3.5	36.3		9.5	19 3.7	11.2		9.5	31.7	0.4		9.4	58.6	29.7		9.1	46 1.1	36.5	
9.3	20.7	20.5		8.5	12.7	0.4	L	9.3	39.3	22.6		9.5	38 2.5	56.4		9.1	17.4	10.6	
9.5	28.6	20.5		9.4	19.1	43.6		7.4	55.1	50.8	R	9.5	13.4	21.8		9.0	19.5	59.5	
9.2	33.1	47.7		9.5	20.5	24.5	B	9.4	29 0.1	45.9		9.5	25.6	17.8	B	9.5	26.3	26.6	B
9.5	11 15.7	4.1		9.5	39.4	24.2	B	7.5	29.2	49.4	L	9.5	26.8	30.8		9.5	33.0	25.7	
7.3	20.0	33.0	R	9.5	42.1	52.5		9.5	33.4	58.9	B	8.5	33.8	6.6	K	9.4	36.1	52.3	
9.1	30.2	33.0		9.4	20 8.9	19.2		9.5	50.6	24.7	B	9.4	39 25.9	24.0		9.5	47.4	1.9	
9.1	36.3	15.7		9.3	21.4	31.0		8.9	30 2.3	58.4		9.1	30.0	41.6		8.7	47 8.0	48.9	B
9.5	52.0	33.5		7.3	30.9	21.7	K	8.5	3.0	38.9	R	8.4	32.2	54.8	K	8.2	10.7	56.8	L
9.2	12 1.4	28.6		9.4	46.7	45.0		8.5	7.1	44.3	L	9.5	40 6.6	30.5		9.2	14.5	49.3	B
9.5	6.2	33.5		9.5	51.9	15.7		9.5	10.6	9.0	B	9.5	7.3	7.4		8.5	32.1	45.2	
9.3	13.9	23.9		9.1	56.2	55.5		9.5	20.7	44.3		9.0	8.5	0.2	K	9.3	51.9	28.4	
8.2	21.2	41.2	K	9.3	56.5	48.9		9.5	34.3	18.1		9.5	30.1	25.4		9.2	53.4	15.3	
9.3	21.8	8.3		9.1	21 8.1	24.2		9.3	37.8	39.3	B	9.5	36.9	30.3		8.8	55.1	40.3	
9.5	28.4	56.5		9.3	13.5	40.5		9.5	40.8	33.3		9.0	45.8	9.3		9.5	57.9	11.7	
9.2	31.0	10.8	K	9.5	45.2	38.0	B	6.8	52.0	40.5	K	7.0	41 1.9	25.1	K	9.3	48 2.4	12.3	
9.5	52.0	33.7		8.4	47.7	27.7	K	9.4	31 11.5	36.3		8.9	5.9	25.7	K	9.5	42.4	37.7	
9.5	13 3.1	46.3		9.5	22 4.9	8.2		9.0	11.6	13.2	K	9.4	6.4	0.4		8.3	46.1	7.3	K
8.5	34.7	26.0	K	9.5	17.5	35.6		8.7	21.1	53.4	L	8.6	7.2	42.9	K	9.3	51.3	33.3	
9.0	45.8	16.2		9.2	23.8	37.0		9.4	28.9	26.6		9.4	10.8	50.1		9.5	58.0	52.9	
9.3	57.8	14.1		7.7	27.1	41.0	K	8.8	39.6	2.2	B	9.1	17.8	6.4	K	9.2	49 2.2	38.0	
9.3	14 7.1	18.1		8.3	40.9	19.8	K	9.5	46.2	13.7		9.2	30.9	18.8		9.5	25.8	16.5	
8.1	15.0	30.7		9.5	43.0	36.7		7.8	32 0.0	33.4	K	9.1	38.0	37.6		8.7	48.0	40.6	K
8.9	19.6	22.2		9.2	54.5	43.1		9.5	0.1	38.2		8.4	40.2	52.8	K	9.5	49.4	9.8	
9.5	33.7	25.4		9.4	58.2	46.8		7.9	31.5	34.3	K	9.5	53.0	10.9		9.2	51.3	18.0	
8.0	34.2	32.4	L	8.9	23 9.8	15.9		9.3	41.0	43.9		9.4	55.2	45.7		9.1	50 13.7	21.2	
6.7	42.5	55.8	R	8.3	14.2	2.4	K	9.5	49.0	13.5		8.3	59.7	1.0	K	9.5	14.3	3.9	
9.5	53.2	55.6		9.5	31.3	58.0		9.3	33 4.7	3.0		8.4	42 6.1	50.9	K	9.3	21.1	42.9	
8.9	57.7	0.4		9.5	37.4	51.5		7.5	13.2	55.6	K	9.0	10.5	36.3		9.5	28.7	36.0	
9.2	15 10.2	56.3		9.2	38.3	19.2		7.5	14.9	0.6	K	9.5	12.8	10.8		9.3	42.1	42.7	
9.4	10.3	25.9	B	9.3	51.9	22.9		8.5	31.3	41.4	K	8.7	14.5	36.0	L	9.5	47.2	58.5	
9.5	14.2	31.3	B	9.5	24 9.6	41.4		9.4	36.6	30.3		9.5	22.2	3.9		9.5	54.3	35.7	
9.0	19.1	31.3	B	9.3	50.3	21.9		9.5	41.5	35.9		8.2	24.1	37.7	L	8.2	55.0	20.1	K
9.3	24.8	10.3		8.8	56.1	42.8		8.2	42.2	14.1		9.4	31.3	11.0	B	7.8	51 11.4	22.1	K
9.3	28.9	23.6		9.5	25 6.2	56.2		7.7	34 16.7	14.1	L	9.4	31.3	3.9		9.5	25.6	38.5	
9.1	57.9	7.3		9.1	6.5	35.2		9.5	18.6	37.4		9.5	48.9	50.2		9.5	30.8	23.4	
9.5	16 6.8	15.7		8.4	38.7	0.7	K	9.0	18.8	12.4		9.0	54.0	35.8		9.0	33.4	45.4	K
9.4	11.0	35.5		9.3	46.1	33.4		8.6	20.1	51.1	K	9.0	56.4	32.5		9.4	44.9	26.1	
9.3	17.9	26.4		9.4	54.2	15.8		8.9	26.4	19.7		9.5	59.7	6.6		9.4	53.6	51.4	
7.9	19.2	55.1	K	9.0	55.8	43.5		9.4	32.8	10.8		9.1	43 29.8	39.7		9.0	55.2	52.1	B
9.5	24.5	38.0		9.2	26 17.0	19.0		9.5	43.5	49.5		9.5	37.8	5.9		9.0	52 0.4	44.9	K
9.4	32.3	53.6		8.5	25.2	54.3		9.5	35 12.9	22.7		9.5	40.9	28.4		9.0	3.7	54.8	
9.2	35.2	56.3		9.0	25.9	17.8		9.1	27.8	8.9		9.5	44.8	16.3		9.3	17.1	39.0	
9.2	44.7	2.6		9.2	26.3	7.5		8.9	45.6	56.5	B	9.5	55.9	25.7		8.6	28.6	0.3	K
9.3	47.4	17.8		9.5	39.5	29.5		8.9	45.8	8.0		8.4	44 3.1	42.5		9.5	30.3	49.1	
9.5	49.5	43.0		7.9	40.8	8.7	K	9.3	48.7	50.4		9.1	11.7	2.8		9.2	47.0	43.4	
9.2	17 1.3	52.7		9.5	53.4	13.3		8.9	36 3.1	40.7	R	8.7	12.3	17.3		9.5	47.0	42.4	

4001—4060				4061—4120				4121—4180				4181—4240				4241—4300			
	19ᵐ—20ᵐ	+21°			20ᵐ	+21°			20ᵐ	+21°			20ᵐ	+21°			20ᵐ	+21°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.9	52 58.7	52.0		9.5	0 52.7	54.7	B	9.4	9 16.0	39.8		9.5	16 36.9	50.3		9.4	24 27.4	50.1	
9.0	59.6	0.1	K	9.4	1 14.6	13.8		9.0	23.9	54.3		9.4	39.2	41.1		9.0	36.0	59.6	
9.5	53 4.8	21.0		9.5	15.0	23.1		9.1	29.8	33.7		9.1	45.2	34.0		8.8	37.6	11.6	
8.4	10.8	10.0	R	9.1	39.2	11.2		9.5	30.2	3.4		9.3	57.8	36.2		9.5	39.7	17.9	
9.4	28.7	15.2		9.5	41.7	9.5		9.3	46.1	10.4		9.5	59.6	30.4		9.2	50.0	56.7	
8.9	44.7	13.0		9.0	49.5	56.0		9.5	47.0	1.9		9.5	17 12.3	2.7		8.0	25 2.3	34.1	K
9.4	54 1.5	12.3		9.5	2 0.3	52.9		9.4	47.0	29.2		9.5	14.7	47.6		6.5	7.7	24.9	K
9.5	8.6	20.4		9.3	5.8	28.0		9.2	48.3	27.9	B	9.3	17.1	21.5		9.1	33.6	30.3	B
9.2	17.1	6.9		9.2	16.2	1.5		9.0	50.0	0.7	R	9.5	17.1	23.2		7.9	43.2	31.3	K
9.4	27.3	9.4	B	8.3	18.0	12.1	K	6.0	57.9	9.7	P	9.5	32.0	35.0		9.5	47.5	50.2	
9.4	33.0	15.4		6.8	23.9	44.2	K	9.5	59.2	58.6		9.0	40.9	28.0	B	9.0	56.4	42.6	
9.5	33.4	45.1		9.5	28.7	10.3		7.0	10 0.4	50.8	K	9.2	42.8	28.6		9.1	26 0.7	57.1	
9.5	43.1	20.2		9.2	38.3	12.7	K	7.0	6.5	57.3	K	9.5	49.9	13.3		7.5	45.3	39.8	L
9.2	48.2	59.1		9.2	40.6	59.9	B	9.4	10.6	7.7		9.5	56.4	52.9		9.5	47.9	51.6	
9.2	55 1.2	32.8		9.5	3 25.2	13.9	B	9.5	18.4	17.8		9.5	58.0	35.6		9.5	57.5	35.1	
9.5	3.2	48.6		9.2	47.6	5.5		9.4	20.1	12.7		9.4	18 0.1	29.6	B	9.0	27 3.8	27.3	
9.5	3.9	52.4		8.3	54.3	42.7	K	9.2	27.0	54.8	B	9.5	3.4	29.0		9.4	5.0	41.1	
9.5	12.9	25.9		9.5	4 12.1	26.5		9.5	43.1	35.1		9.5	6.0	23.4		9.0	6.5	18.4	
9.5	13.8	12.8		9.2	12.7	40.3		8.0	46.2	7.5	P	9.5	14.1	31.7		9.5	12.0	53.8	B
9.5	20.7	17.5		9.5	15.2	43.5		9.5	11 1.4	31.5		8.7	19.8	27.9		9.5	24.5	42.5	
9.3	26.6	22.9		9.3	18.7	6.5		7.7	2.5	18.4	K	9.2	30.8	1.8		9.5	25.6	58.6	
9.4	27.6	6.7	B	9.5	30.7	26.9	B	9.5	5.3	57.4		9.2	32.5	21.9		9.3	27.1	52.5	B
9.3	30.9	44.4		8.6	35.0	28.7	K	8.1	12.5	41.5	K	6.9	46.8	1.4	R	9.5	29.3	4.2	
9.5	31.0	47.6		9.2	38.6	6.4	B	9.5	39.1	32.7		9.2	52.3	28.8		9.5	36.0	56.3	
8.3	32.7	52.8	K	9.4	42.4	6.8		9.1	59.7	32.1	K	9.4	58.9	28.6	B	9.3	36.2	17.3	
9.4	55.3	12.0		9.5	44.2	46.5		9.5	12 1.6	10.0	B	9.5	19 17.4	46.1		9.4	44.4	4.7	
6.5	56 4.5	45.2	K	9.3	49.9	50.8		7.2	14.0	4.1	K	8.8	23.1	15.9		8.9	48.7	25.3	
9.5	5.0	10.1		6.0	5 0.7	26.9	B	9.5	19.0	22.2		9.4	28.9	0.5		9.2	58.1	27.5	
9.0	26.5	7.0		8.6	7.7	36.0	K	8.9	25.6	14.1		9.5	37.2	20.5		9.0	59.0	23.5	
8.0	27.4	27.3	K	9.5	11.4	17.2		9.4	26.8	33.5		9.4	20 1.8	2.9		9.5	28 14.0	55.4	
9.1	32.9	20.4	B	8.7	11.8	22.0	K	9.0	31.6	45.8	B	9.5	3.5	58.7		9.0	18.8	43.3	
9.5	44.8	11.3		9.5	12.0	32.0		9.4	35.7	47.8		8.7	44.6	13.2	K	9.5	21.5	40.1	
9.0	47.7	52.2	B	9.5	13.4	43.8		9.5	40.0	39.1		9.1	59.8	18.4		9.5	30.6	23.6	
9.2	57 14.5	31.2		9.3	17.8	50.0	B	9.5	43.1	57.5		7.8	21 14.7	45.6	L	9.5	32.2	35.3	
9.1	17.0	25.1		9.5	23.5	14.3		9.5	51.6	7.8		9.5	32.2	28.6		9.4	34.0	12.3	
6.6	21.6	5.8	K	9.5	50.6	15.3		9.1	13 13.9	26.3		9.2	34.6	9.3		9.2	34.8	4.3	
9.5	26.9	21.0		9.5	52.3	6.2		9.5	15.0	54.5		9.4	39.5	24.0	B	9.5	53.4	38.8	
9.3	28.4	0.0	B	9.4	6 7.4	58.6	B	9.1	20.2	28.0		9.5	40.4	17.7	B	9.1	29 1.4	35.7	
9.4	39.3	37.1	B	9.5	17.2	51.4		9.0	21.3	10.6	K	9.5	45.6	50.4		9.5	44.4	34.7	
8.9	58 3.0	57.4	K	9.3	31.0	42.6		9.3	23.0	3.1		9.4	48.0	24.3		9.5	47.1	28.1	
9.5	7.5	29.9		9.4	43.6	13.7		9.5	36.0	40.5		7.2	49.3	40.2	L	9.5	50.5	24.0	
9.2	18.7	50.7	B	9.5	46.7	18.6		9.2	40.7	27.9		9.4	52.5	51.1	B	9.3	30 1.3	42.3	
9.5	35.0	59.1		9.0	47.2	24.6		9.5	14 6.6	9.6		9.5	53.4	5.1		9.5	22.8	33.0	
9.5	39.6	7.0		9.0	50.7	25.0		7.0	21.4	49.6	K	8.7	22 13.6	33.0	L	9.0	25.0	54.8	
9.2	41.4	40.0	B	9.4	7 4.0	57.7		9.0	25.9	5.5	K	8.5	24.0	38.6	K	8.2	32.6	3.9	K
9.5	56.0	4.6		9.5	15.8	18.7		9.5	26.0	20.5		9.5	33.6	32.0	B	9.4	35.4	4.3	
9.5	58.5	51.1		9.5	28.9	12.0		8.2	38.0	3.8	K	8.1	36.1	33.6	K	9.5	47.6	57.3	
9.4	59 7.1	30.4		9.5	30.4	7.0		9.0	44.9	45.1	K	8.4	38 6	59.6	K	8.3	50.8	18.6	K
9.1	14.4	0.8		7.0	44.9	47.3	S	9.5	51.6	21.4		8.7	44.4	28.5	L	9.4	31 7.7	32.9	
9.5	31.1	5.2	B	9.2	46.5	46.3		9.5	56.5	57.2		8.9	49.5	22.0		9.4	10.3	18.3	B
9.5	34.7	13.6		8.8	58.4	40.9		9.4	15 6.7	50.0		9.0	49.8	10.9		9.5	14.2	7.3	
8.1	37.7	49.1		9.2	8 18.0	4.9		9.5	34.7	24.2		9.5	23 15.0	43.9		8.5	17.3	32.6	K
9.3	52.8	21.0		9.5	20.0	11.3		9.5	37.8	2.6		9.0	34.3	54.4		8.8	18.0	20.4	K
9.0	54.8	48.7	B	9.5	22.5	50.8		9.4	39.0	59.3		9.4	37.4	20.8	B	8.8	28.6	10.3	K
9.3	55.3	49.1		7.3	26.2	32.1	B	9.3	49.6	53.3		8.1	39.8	20.5	L	9.5	29.7	25.6	
9.3	58.6	41.2		9.5	33.4	57.6		9.5	53.5	59.6		9.3	54.9	4.4		9.4	30.6	5.2	
9.0	0 7.8	48.2		9.4	49.5	42.8	B	9.4	59.2	49.4		9.5	56.4	35.4		9.4	32.4	21.6	B
9.3	9.0	29.5		9.5	58.0	0.3		9.1	16 5.1	36.1		9.0	24 7.3	3.1		9.4	47.5	3.4	
8.0	29.0	22.3	B	9.3	9 10.3	0.3		8.7	8 6	52.9	K	9.0	19.4	44.7		9.5	51.7	54.3	
9.4	41.6	46.1	B	9.1	10.5	48.5	B	8.3	11.7	20.9		9.4	24.5	20.7	B	8.9	53.4	27.8	

4301—4360				4361—4420				4421—4480				4481—4540				4541—4600			
	20ᵘ	+21°			20ᵘ	+21°			20ᵘ—21ᵘ	+21°			21ᵘ	+21°			21ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	32 25.9	0.7		9.5	42 2.8	7.7		9.5	51 17.3	43.5		9.2	2 42.9	35.5	K	9.5	18 42.1	14.7	B
9.4	32.5	39.4		7.5	4.6	5.6	B	9.2	25.0	26.1		9.4	3 16.0	3.4		9.5	52.4	3.5	
9.5	33.1	3.3		8.3	5.5	35.4	K	9.5	26.3	45.6		8.7	17.1	20.7	K	9.3	19 26.0	58.7	
9.5	39.5	55.3		9.4	9.8	9.8	B	5.1	47.2	45.9	K	9.5	34.8	6.9		8.0	20 14.2	32.9	K
6.0	44.5	18.8	K	8.8	28.2	49.7	K	9.5	52 8.1	31.6		7.5	59.5	52.5	K	8.5	17.0	49.6	K
9.1	54.4	23.5		7.5	36.3	51.0	K	7.0	34.8	47.3	K	6.5	4 0.0	52.3	K	8.8	24.1	14.7	
8.4	33 7.8	12.7	K	9.5	42.1	47.9		9.3	35.2	29.5		9.4	15.0	58.9		9.3	34.1	7.2	
8.3	12.6	10.7	K	9.4	43.9	13.8	B	9.4	53 17.3	58.6		9.4	18.0	1.5		9.0	53.6	55.6	
9.4	15.4	50.5		9.5	49.8	3.0		9.5	34.3	10.5		9.2	56.7	8.8		7.0	21 10.2	6.4	K
8.5	31.2	38.1	K	9.5	49.8	42.6		9.5	35.7	47.5		9.4	59.4	20.0	B	9.3	11.2	47.5	
9.3	31.2	20.9		9.4	54.7	35.6		9.4	38.0	54.0	R	9.5	5 1.6	18.0		9.0	12.5	49.9	
8.6	32.1	27.4	K	9.5	43 7.3	48.0		9.5	48.0	13.3		9.5	19.3	59.3		9.5	40.5	28.4	
9.5	50.2	10.7		9.5	8.1	57.6		9.5	53.8	59.3		9.5	24.8	45.0		9.4	55.9	37.6	B
9.2	53.7	21.8	B	9.0	10.8	12.6	B	9.5	54 0.8	13.6		9.5	6 28.7	0.9		9.5	22 11.2	45.0	
9.5	59.4	3.4		9.5	24.3	40.7		9.0	37.1	19.7		8.8	58.3	19.2	K	5.5	22.3	33.4	K
9.4	34 4.2	45.4		8.7	34.9	23.4		9.3	37.6	30.3		9.4	7 2.3	41.8	B	9.4	22.7	32.2	B
9.5	6.7	18.5		9.0	45.4	0.6		8.9	44.4	23.0		9.4	2.7	39.3		9.1	46.2	29.1	
7.2	9.7	25.2	K	9.0	47.8	42.7	R	8.7	50.2	37.8	K	9.5	12.9	28.2		9.4	23 7.3	27.9	
8.6	37.4	2.0		9.2	44 0.5	54.3	B	8.3	55 4.5	17.3	K	9.4	27.3	7.0	B	9.5	28.0	57.0	
9.4	40.2	31.7	B	9.5	21.3	59.9		9.1	13.4	22.2		9.3	35.6	18.7		9.5	34.9	6.4	
8.6	55.9	8.1	K	9.3	32.0	7.7		9.5	28.1	40.5		7.3	8 0.8	37.1	K	9.5	38.7	46.2	
9.5	35 9.6	22.3		9.4	36.0	54.6		9.5	48.9	59.2		9.3	13.0	47.9		9.4	24 3.5	45.4	
9.2	27.8	31.8		9.3	59.5	1.2	B	8.9	57.7	42.0		9.5	46.4	30.9		9.5	14.5	13.3	
9.5	41.3	2.1		9.5	45 5.6	38.1		7.7	59.5	6.5	K	8.0	48.5	10.7	K	9.5	26.5	56.8	B
8.8	36 0.2	13.8		9.5	13.0	15.2		7.9	56 3.9	7.3	K	9.4	51.8	37.5		9.5	35.0	57.8	
9.2	1.6	17.0		9.5	19.6	38.2		9.4	15.2	5.5		7.7	9 43.0	17.8	K	9.5	41.3	41.0	
9.3	5.7	53.0		7.7	21.3	20.2	K	8.7	15.3	24.3		9.4	10 18.2	21.3	B	9.1	25 7.9	35.9	B
9.2	12.4	46.4	K	9.4	25.1	57.9		7.3	15.8	14.6	K	8.2	33.0	54.4	K	9.4	28.8	34.1	
9.5	34.9	56.9		9.5	39.5	53.5		9.5	27.0	20.4		6.8	59.8	56.4	K	9.4	38.2	53.5	
9.5	34.9	22.5		9.2	52.9	20.1		9.5	27.3	39.5		8.0	11 10.3	48.1	K	9.4	26 46.5	36.8	B
9.5	49.7	0.5		9.3	59.9	27.8	B	9.5	32.7	48.8		9.0	13.0	36.9	K	9.4	49.0	7.2	
9.5	52.3	54.2		9.1	46 1.1	15.1	K	9.4	57 7.1	39.8		9.5	21.1	9.4		9.3	27 5.2	58.5	
9.3	37 0.6	33.1		9.4	12.6	3.8		9.5	9.0	49.3		7.0	36.9	30.3	K	9.5	23.9	31.6	
8.7	9.2	59.7		9.0	16.8	41.7		8.7	11.4	30.9	K	8.7	47.4	7.8		9.5	43.0	53.1	
9.5	14.0	45.3		9.5	26.4	10.7	B	9.0	18.0	7.4	K	9.5	12 2.5	18.0		9.5	28 26.2	17.4	
9.4	17.3	47.3	B	8.6	59.0	50.7	K	9.0	23.0	34.2		9.5	12.8	23.5	B	9.5	30.6	42.3	B
9.5	23.4	49.3		9.0	47 3.5	2.5		9.0	40.7	57.1	K	9.5	19.8	56.4		9.0	29 6.5	23.0	
9.5	30.0	45.8		9.5	19.4	36.3		9.5	53.9	3.0		7.5	39.2	46.5	L	9.5	9.5	54.0	
9.4	43.9	52.1		9.5	20.4	29.9		9.5	58 12.2	55.7		9.1	13 4.1	5.9	K	9.2	9.5	8.7	
9.4	44.3	22.9		9.2	28.0	58.7		9.4	15.0	2.3		9.0	8.5	40.9		9.3	34.2	0.2	K
8.8	50.2	57.3		9.5	54.3	32 5		9.2	28.9	52.5		6.0	40.2	25.7	K	9.3	53.9	33.0	
8.6	53.5	3.7		8.1	58.5	9.0	K	8.0	58.0	17.7		9.0	41.9	30.8	K	9.5	30 8.1	53.6	
9.5	54.1	14.2		9.2	48 11.4	59.7		9.3	59 23.3	6.7		9.1	48.0	29.3	K	9.5	21.7	35.1	
9.5	39 6.6	56.9		9.5	26.3	58.8		9.5	34.2	22.1		9.5	50.2	9.2		9.5	33.7	6.3	
9.1	10.0	57.3		9.5	28.2	51.7		9.1	52.1	3.1	K	9.5	14 11.5	29.8		9.4	42.5	12.6	
9.0	25.0	9.6	B	9.5	37.8	13.5		9.5	59.3	56.7		9.5	16.2	43.8		9.5	49.6	42.6	
9.3	40 10.2	9.3		9.4	49 4.0	24.8		9.0	0 4.6	15.8		9.5	16.8	31.3		8.8	31 3.2	17.3	
9.5	14.8	24 6		7.8	10.4	9.7	K	9.5	5.3	0.4		9.5	21.3	56.4		9.5	22.9	15.4	
9.5	21.4	18.3	B	9.1	14.7	25.3		9.0	7.8	7.3	K	9.0	45.4	20.9		9.5	30.4	44.8	
7.7	41.3	27.4	K	9.1	30.1	51.6	R	9.4	43.4	42.1		9.5	15 18.9	1.5		8.9	32 2.1	10.5	K
9.3	44.9	44.7	B	8.7	32.9	55.0	K	7.4	1 28.4	11.1	K	9.4	45.9	44.4	B	9.3	14.9	48.5	
9.2	46.3	43.6	K	9.4	35.3	17.0		8.9	30.1	57.5		9.5	48.5	30.9		9.4	25.7	35.2	B
9.5	41 0.5	22.9		8.5	41.5	49.0		9.5	46.8	59.9		9.5	52.8	48.2		8.8	30.3	29.9	K
9.5	16.4	22.9		8.1	43.0	12.7	K	8.8	48.7	28.4		9.5	16 32.1	28.1		9.1	30.8	35.0	B
9.4	20.0	0.5		9.5	50 36.3	14.5		9.4	56.2	32.1		8.8	17 8.5	9.7	K	9.0	40.1	49.5	
8.3	21.6	43.6	K	9.3	38.4	2.5		9.1	2 3.9	34.8	B	9.5	14.2	5.9		8.8	33 8.2	18.1	K
9.5	33.7	50.8		9.5	43.5	22.1	B	9.5	10.3	37.6		7.2	19.2	20.2	K	9.5	30.8	58.1	
9.5	47.9	15.4		9.4	53.1	21.9	B	9.4	19.0	51.4		9.4	22.3	58.8	B	9.5	34 11.1	5.3	
9.1	49.6	23.1		9.5	54.8	25.6		9.5	31.9	13.8		9.5	29.6	50.5		7.5	22.5	33.7	K
9.5	42 1.2	56.0		9.5	51 9.6	37.7		9.1	33.2	50.0		9.5	18 9.2	18.2		6.7	41.9	17.1	K

4601—4660				4661—4720				4721—4780				4781—4840				4841—4900			
	21ʰ	+21°			21ʰ—22ʰ	+21°			22ʰ	+21°			22ʰ	+21°			22ʰ—23ʰ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	35 1.0	22.8	B	8.7	52 35.4	27.8	R	9.1	9 8.0	17.5		9.5	26 41.3	31.8		9.5	44 39.6	28.8	
9.0	36 0.2	58.6		9.1	51.5	30.6	B	9.5	10.1	30.4		9.5	52.9	56.9		9.5	53.8	8.2	
8.8	4.7	48.7	R	8.0	53 26.4	22.1	K	7.5	10 21.3	41.1	K	9.2	57.0	40.8	B	9.4	55.8	33.2	
9.5	4.9	52.6		8.2	26.7	30.4	K	8.1	28.7	17.9	K	9.5	27 18.1	36.3		9.0	46 0.4	6.6	
9.2	13.5	11.6		7.3	54 11.4	10.4	K	9.5	30.3	4.6	B	8.8	28 1.3	21.4	K	9.4	16.4	20.9	
9.5	42.7	7.0	B	9.5	17.4	30.2		9.5	11 12.5	8.7	B	7.3	2.4	32.8	K	9.3	55.7	49.8	
9.5	52.9	8.0		9.5	52.7	48.4		9.1	30.3	29.0		9.5	12.5	18.0		8.8	54.4	37.4	
9.4	37 28.9	12.0		9.5	55 31.5	8.9		9.1	36.8	58.5	K	9.5	17.0	12.5		8.8	47 6.1	51.1	
9.5	34.5	17.8		9.3	51.2	16.6		9.2	59.6	52.1		9.5	40.7	24.6		8.8	12.4	12.5	
9.5	55.6	56.1		9.5	56 5.2	9.2		8.0	13 21.1	5.8	K	9.2	29 13.0	45.0		8.3	13.1	38.4	K
8.8	38 48.9	16.1		9.2	5.4	6.6		9.2	32.5	30.0		9.3	24.2	4.2		9.5	38.8	19.1	B
8.9	50.4	38.9		8.5	9.3	22.6		9.4	36.0	46.9		9.5	42.3	3.8		9.3	48 15.8	6.5	
9.3	39 4.2	9.8		9.5	10.5	28.9		9.2	37.4	12.5		8.5	51.8	0.0	K	9.5	31.4	24.2	
8.5	46.0	10.2	K	9.4	33.4	44.5		9.5	14 9.3	55.5		8.9	55.7	22.8		9.1	49 19.2	5.3	
6.8	46.9	30.9	L	9.2	48.7	6.0		9.3	15 23.1	9.8		9.2	30 5.0	57.7	B	9.5	21.1	31.9	
8.8	40 22.9	43.0		9.5	57 27.5	57.4		9.5	23.7	31.8		9.5	10.5	51.7		9.5	42.6	27.8	
7.5	30.2	21.0		8.8	30.4	5.7	K	9.5	27.5	54.1		9.3	20.4	34.2		9.3	50.8	19.2	
9.5	59.4	1.8		8.7	57.8	6.5	K	8.8	40.0	40.1	K	9.5	27.8	8.3		9.0	50 6.6	16.4	B
9.5	41 3.9	34.1		9.5	58 8.1	6.0	B	9.1	41.4	2.0	K	8.5	42.3	31.1	R	9.5	13.0	54.8	
9.5	23.0	53.8		6.8	11.7	56.4	R	9.0	54.8	12.3	K	9.1	31 38.0	29.6		9.5	55.3	53.8	B
9.5	58.7	3.2		9.5	20.7	23.6		9.5	16 12.4	32.8		9.1	41.0	3.3		9.5	56.1	16.7	
7.0	42 6.2	46.4	K	9.2	23.0	14.6	K	9.4	21.1	51.1		9.2	32 13.4	0.6		9.5	51 15.6	40.6	
7.8	18.3	12.6		9.5	27.3	12.8		9.1	21.4	54.4	B	9.0	53.3	17.3		8.5	17.7	45.4	K
9.2	29.1	15.5	B	9.1	50.3	46.3	K	9.1	23.3	14.5	K	9.1	33 10.0	48.9		9.5	23.3	48.8	B
9.0	48.6	34.5		9.0	55.4	34.9		8.0	55.5	22.5		9.0	16.2	44.9	B	7.5	53 53.2	53.1	K
8.3	49.5	56.2		9.5	59 15.7	0.6		8.8	17 0.6	48.4		9.1	20.6	17.0		7.5	55.3	36.5	K
8.9	43 10.9	28.2		9.5	59.6	17.0		8.9	54.7	50.4	R	9.0	34 21.5	59.8		8.8	54 16.3	8.7	
9.5	13.2	17.2		9.5	0 1.2	7.3		9.2	18 0.9	1.3		9.3	25.1	5.3		9.5	19.0	56.9	
7.0	49.9	16.8	K	9.4	3.6	46.4	B	8.2	16.9	8.6	R	9.5	32.3	20.9	B	9.0	19.2	49.7	
8.0	53.2	36.0	K	9.5	27.5	46.7	B	9.4	24.6	18.1		9.4	36.7	30.4		9.5	50.9	27.1	
9.0	44 42.9	54.0		9.5	35.8	54.9		7.5	36.7	51.0	K	9.5	39.2	3.8		9.2	51.5	44.4	K
9.0	45 0.3	58.2		9.5	39.7	37.3		9.0	44.8	34.8	K	7.3	52.6	37.6	K	9.5	56 42.0	15.0	
9.5	21.8	52.5		9.5	41.1	46.2	B	9.4	59.9	0.1		7.0	35 4.0	20.4	K	9.2	58.5	30.1	
9.2	23.6	3.4	B	9.1	48.6	7.2	R	9.1	19 5.6	13.9		9.5	24.5	51.8		8.7	57 2.9	36.7	B
9.5	41.5	54.3		5.8	1 2.1	0.1	K	7.5	53.9	8.6	R	9.5	41.3	16.3	B	9.5	15.8	40.6	
9.1	47.9	20.9		6.8	2 2.0	27.0	K	9.5	20 27.5	17.3		9.4	36 3.4	44.5		9.5	58 16.3	25.0	
9.3	53.2	28.2		8.0	33.4	49.9	K	9.5	37.3	37.7		8.9	18.7	38.7		9.5	37.2	17.4	
8.2	58.9	4.1	K	7.3	49.7	31.7	K	9.4	38.0	44.6		9.5	18.9	48.7		9.5	54.0	54.6	
8.8	47 0.4	29.9	K	9.3	55.7	13.8		9.1	21 51.3	24.2		9.5	37 19.0	45.6		8.9	59 4.7	48.6	
9.5	3.5	42.0		9.1	3 15.3	39.0		9.1	51.8	49.0	K	7.8	30.0	11.1	K	9.5	13.8	27.1	
9.5	34.0	50.9		9.5	23.0	42.7		9.5	22 3.2	47.9	B	8.5	38 28.0	33.5		8.6	34.1	2.3	K
9.3	48 5.5	53.6		9.4	34.3	49.7		9.4	11.2	50.6	B	8.8	35.8	49.7		9.5	0 54.9	57.8	
9.3	6.2	29.5		9.5	58.5	8.6		9.5	23.0	18.6		9.1	38.1	24.2		9.5	1 6.5	50.7	
9.1	42.9	37.6	K	9.5	4 27.8	9.3		9.5	37.3	55.0		9.5	39 1.5	2.9		8.5	7.3	19.5	K
9.5	58.9	8.6		9.5	45.6	27.0		9.5	59.0	41.8		9.5	4.0	17.0		8.5	46.1	41.3	K
9.5	49 0.5	59.9		9.5	47.1	4.8	B	9.5	23 6.6	5.5		9.3	6.9	57.1		9.3	50.6	58.4	
8.8	2.3	54.1	K	9.5	50.0	38.0		9.5	7.5	14.3		9.2	46.9	37.3		9.5	2 34.5	56.7	
9.3	35.6	41.2	B	9.5	5 24.1	56.7		9.3	12.8	13.7	B	8.3	51.1	55.4	K	9.0	44.2	41.6	
8.8	36.2	50.6		9.5	31.2	57.6		9.4	13.0	18.5		9.5	40 5.4	22.9		9.5	51.4	55.5	
7.7	46.1	7.5		9.5	6 14.6	8.0		7.3	20.3	43.6	K	9.4	28.7	44.7		9.5	3 52.8	14.2	
9.5	52.3	36.2		9.0	17.9	4.0		9.5	35.4	53.7		9.5	34.5	34.6		9.4	55.7	19.8	
9.5	50 21.5	50.2	B	9.3	20.8	20.0	B	8.5	36.7	47.7	K	8.8	40.6	0.1		9.5	4 9.9	54.6	
9.1	25.2	58.1		9.4	25.1	49.2	B	9.3	46.9	6.3		8.7	41 13.4	13.6	K	9.5	19.1	5.2	
9.5	59.9	4.0	B	9.1	35.0	41.2		9.5	24 20.0	27.0		9.5	40.8	50.6		9.5	21.0	37.5	
9.2	51 12.9	42.7		9.5	7 11.8	25.2		9.3	25 20.0	44.2		9.3	42 19.9	6.8		9.5	25.3	54.3	B
9.4	15.0	4.2	B	9.3	31.7	23.9		9.5	23.2	0.8		9.5	43 6.4	41.8		9.3	56.5	57.6	
8.0	36.2	33.1	R	9.1	38.4	8.4		9.3	38.0	53.6		9.4	26.1	13.9		9.3	5 46.1	11.1	
8.3	56.1	54.1	R	8.6	59.0	13.5	K	9.3	44.0	32.1		9.5	55.4	10.1		9.5	57.0	30.5	
9.5	52 22.1	49.0		6.6	8 0.4	48.8	K	9.0	26 4.5	9.9		9.5	56.3	52.1		9.5	6 1.2	56.0	B
9.5	25.3	58.4	B	9.3	8.2	56.2		9.5	20.6	53.1		9.4	44 24.0	7.5		8.5	8.2	16.7	K

4901—4926				4927—4951				4952—4976				4977—5001				5002—5026			
	23ᵘ	+21°			23ᵘ	+21°			23ᵘ	+21°			23ᵘ	+21°			23ᵘ	+21°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	6 31.5	52.4		8.9	17 13.3	28.1	K	6.0	26 13.7	43.4	K	7.8	36 24.4	8.4	K	7.8	49 56.1	33.3	K
9.5	7 51.4	6.5		9.5	18 2.2	39.6		8.0	22.2	31.3	K	9.3	27.3	20.5		9.5	50 16.9	27.0	B
8.9	8 55.3	23.3		9.1	8.9	24.4		9.5	27 11.3	5.1		9.5	29.9	58.7		9.4	51 9.0	2.7	
9.4	9 15.4	42.3	B	8.8	51.8	12.3		9.3	17.2	8.6	B	9.5	56.1	56.8		8.8	10.1	34.3	
9.5	18.9	45.5		8.8	19 26.7	53.5	K	9.4	25.4	24.3		9.0	39 48.2	27.7		8.6	43.6	22.6	K
9.1	10 4.8	33.4	K	9.2	20 31.4	2.9		9.5	28 47.2	20.5		9.5	40 15.5	12.5		9.2	53 11.6	5.7	R
9.5	14.3	53.0		9.3	47.4	40.6	B	8.2	29 13.1	5.3	K	9.4	49.1	53.6	B	9.5	24.7	22.4	
9.5	20.5	58.2		9.3	21 0.5	54.4	B	9.3	34.4	9.9		9.5	41 28.5	11.4	B	8.3	34.4	54.1	
8.8	41.5	50.0		9.5	7.8	47.8		7.3	30 2.7	26.7	K	9.2	43 7.6	13.6		9.5	46.0	16.1	
8.8	46.6	31.5	K	9.5	14.0	39.4		7.7	5.0	41.3	L	9.2	58.5	57.8		9.3	54 4.7	36.4	B
9.1	11 23.2	55.5		9.5	18.2	38.9		8.5	21.8	31.6	K	8.8	44 1.3	31.8		9.5	13.1	1.7	
9.5	57.7	48.6		9.0	22 1.1	33.4	R	9.0	26.4	27.4	K	9.5	28.4	7.9		9.4	17.0	5.2	B
9.4	12 5.8	36.2		9.5	12.5	43.4		9.5	31 39.2	56.2		9.5	46.6	23.6		9.5	21.2	37.4	
8.1	13 15.0	21.7	K	9.4	38.6	23.6		9.1	40.2	44.9	K	9.5	58.7	9.5		9.2	37.5	31.4	
9.4	32.9	31.0		9.2	46.2	24.9	B	9.5	49.3	16.4		9.2	45 16.2	4.9		9.4	55 41.5	34.7	
7.6	37.1	10.0	K	9.2	57.0	52.7		9.5	56.5	51.0		9.3	46 32.9	37.3		9.4	50.1	37.5	
9.5	14 3.6	57.7		9.0	23 5.1	54.9		9.2	32 55.2	53.2		8.6	47 27.7	21.6		9.3	56 20.5	30.3	B
9.2	17.9	48.9		9.5	25.3	39.3		8.5	33 13.7	41.4	K	7.8	29.1	39.3	K	8.0	27.1	29.2	K
9.5	33.0	6.5		7.5	27.3	14.3	K	9.5	17.3	52.7		9.0	48 2.6	24.7	K	9.5	35.7	59.7	
9.2	46.2	29.1		9.5	24 33.5	3.5		9.5	29.9	58.6		9.3	16.7	1.1		9.4	45.1	36.1	
9.0	49.4	52.1		9.5	53.4	19.4		9.5	43.8	57.8		9.5	49 16.1	22.0		8.3	55.1	45.7	K
9.3	15 21.3	41.0	R	9.5	25 4.1	11.1		9.5	34 23.0	38.2		9.4	19.0	15.4		9.5	57 2.0	54.2	
9.4	35.2	20.6		9.5	9.5	20.2		9.3	35 7.3	43.4		6.0	19.8	50.5	K	9.3	25.2	18.4	
9.5	16 10.4	25.7		9.5	21.1	0.9		9.0	39.5	9.0		8.8	20.2	57.6	R	9.5	59.6	6.9	
9.3	26.5	53.8		9.5	31.7	29.9	R	8.6	42.0	18.8		8.0	51.2	12.7	K	9.1	58 0.0	24.9	K
9.5	43.7	8.1																	

Zone +22°

1—20				21—40				41—60				61—80				81—100			
	0ᵘ	+22°			0ᵘ	+22°			0ᵘ	+22°			0ᵘ	+22°			0ᵘ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	0 30.0	50.3		9.5	5 46.4	18.8		9.0	10 53.5	35.8		9.1	18 26.4	19.3		9.4	25 31.4	15.8	
9.5	45.5	4.2		9.5	6 17.6	45.2		7.0	11 9.0	4.3	K	9.0	26.5	58.2		8.2	26 1.6	27.2	L
9.5	1 6.1	37.5		9.5	20.3	51.7		9.5	41.7	29.3		9.4	31.0	47.5	B	9.5	11.5	22.1	
9.0	14.7	49.7	B	9.5	25.0	36.5		9.5	43.1	21.7		9.5	19 31.4	22.4		9.3	18.5	47.8	R
9.1	32.2	50.3		9.5	7 9.3	32.8		9.4	13 5.8	48.9		8.4	20 12.1	39.2		9.5	46.6	58.1	
9.0	53.0	59.7		8.0	21.2	59.8	K	9.1	20.0	57.0		7.9	19.0	45.8	L	8.5	27 18.3	6.0	K
9.1	2 31.6	52.3		9.1	36.3	5.9		9.4	28.5	34.4		9.3	20.4	57.8		8.9	25.7	58.4	K
9.1	39.2	4.3		8.5	39.1	14.2		9.4	32.6	44.1		8.6	46.0	56.1		9.5	36.0	55.9	B
9.3	56.5	21.8		8.3	8 1.5	14.2		8.9	52.1	18.9	K	8.9	21 31.8	29.4		9.5	28 20.1	17.0	
9.4	3 2.6	45.5		9.0	6.6	15.5		9.5	14 42.5	35.9		9.0	22 0.9	3.9		9.4	36.5	24.1	
9.2	4.5	50.0		8.0	11.5	37.9		9.1	43.6	22.8		9.3	42.1	28.6		9.5	46.1	59.2	
9.5	36.0	23.1		9.5	16.1	0.8		9.5	15 9.2	18.0		8.4	23 0.0	40.9		9.3	51.2	26.1	B
9.5	51.3	30 6		9.3	9 5.6	0.2		9.3	16 27.0	2.9		9.5	50.0	14.8		9.5	29 5.6	2.5	
6.0	4 32.5	40.6	K	6.5	24.5	27.6	K	9.5	36.6	28.0		8.7	50.3	7.9		9.3	30 34.0	51.7	
9.5	36.3	27.5	B	8.7	35.0	27.5	B	9.5	17 2.0	3.6		8.4	24 6.0	54.1	K	9.3	39.8	59.6	
9.0	55.1	37.9		8.0	43.1	47.2	L	9.4	7.1	17.9		9.5	14.5	57.5		9.4	31 20.6	44.4	
9.5	59.4	10.0		9.4	55.6	17.6		9.5	29.2	31.4		9.2	38.1	7.6		9.5	33.5	10.4	
9.4	5 1.3	3.1		9.5	56.6	7.8	B	7.7	18 6.8	8.4	B	8.6	43.1	17.6	L	8.5	44.4	52.9	K
9.4	12.1	7.5		9.5	10 42.8	53.0		9.3	9.9	13.5		7.5	25 3.5	23.2	K	9.5	32 25.4	28.7	
9.2	25.1	16.2		7.8	53.4	4.3	K	9.5	18.5	43.0		9.2	19.7	3.9		9.1	30.5	9.7	

101—160				161—220				221—280				281—340				341—400			
	0ᵘ		+22°		0ᵘ—1ᵘ		+22°		1ᵘ		+22°		1ᵘ—2ᵘ		+22°		2ᵘ		+22°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.5	32	45.1	58.9	K	8.7	52	44.9	53.9	K	8.9	15	39.8	10.8	K	9.3	46	25.2	26.2		9.1	16	37.2	39.3	K
9.5		55.9	22.2	B	9.4		50.8	7.6		9.5	16	34.3	16.0		9.3		34.0	33.1		9.3		40.4	30.0	B
8.7	33	3.1	18.7	K	9.5	53	1.0	25.9		8.0	17	19.1	11.2	L	9.4		45.8	32.4		9.4	17	18.5	5.2	
8.8	34	9.6	1.7		9.5		37.1	5.2		9.5		22.2	26.3		6.5	47	47.7	52.4	K	9.5		40.7	44.9	
9.5		12.5	59.6		9.4	54	1.2	38.3		9.0		23.7	20.8		8.8	48	0.2	34.5	K	9.4		42.2	32.5	R
8.3		43.0	2.4	K	9.1		22.7	20.7		6.5		42.9	45.9	K	9.3		11.4	27.6		9.4	18	10.5	57.7	
9.5	35	3.5	36.8		9.0		26.4	56.6		9.0		51.8	20.4		8.0		45.5	20.4	K	7.8		46.3	13.9	K
9.3		32.1	40.6		8.8	55	44.2	16.0		8.8	18	26.0	1.8		5.0	49	52.6	53.2	K	9.1	19	0.2	13.9	K
9.1	36	6.1	12.5		9.4		47.9	53.4		8.6		40.5	49.7		8.5		54.1	53.6	K	9.5		18.3	28.3	
9.3		22.5	30.0		8.5		49.4	59.1	K	8.5		54.1	32.4	K	9.3	50	9.4	53.6	B	9.1		58.5	41.1	
9.3		31.4	36.5		9.5	56	14.6	57.5		8.8		56.2	1.6		9.2		50.2	43.1		9.4	20	0.8	27.4	
9.0		52.0	54.5		9.5	58	34.8	2.9		9.0	19	5.0	47.3		9.3	51	7.8	32.0		9.2		48.3	52.1	
7.0	37	33.6	48.2	K	9.1		35.9	40.3	B	9.5		30.7	28.7		9.1		10.9	38.6		8.6		51.5	13.8	K
9.5		34.0	7.8		8.0		52.7	27.6	K	9.5		30.9	30.0		9.4		43.9	42.0	R	8.0		59.0	49.6	R
9.3		51.1	13.2		9.5	59	15.4	4.3		9.5	20	15.3	54.0		8.7	52	54.0	9.0	K	9.5	21	18.2	34.2	
9.4	38	9.5	51.6		8.4		48.8	12.1	K	6.5	21	46.7	8.3	K	7.0	53	30.1	41.4	R	9.1	22	7.3	38.3	
9.3		51.6	58.7		9.5	0	0.5	33.9		9.5		54.2	24.2		9.3	54	2.5	48.3		9.3	23	18.2	44.5	
9.4		53.5	26.2		9.5		7.7	32.4		7.5		54.6	56.3	K	8.5	55	30.7	10.4	K	9.1		22.8	48.4	
9.5	39	7.5	43.8		9.5		10.5	7.0	B	8.0	22	56.7	26.2	K	9.3	56	7.0	0.6		8.8		51.7	10.5	K
9.3		17.6	52.0		9.5		39.8	24.9		9.5	23	44.7	42.1		8.6		17.2	0.6		9.5	24	4.8	14.9	
8.0		20.0	27.9	R	8.8	1	18.0	21.8	K	9.0	24	18.5	2.2	K	9.1		47.6	6.5		8.6		15.7	29.1	
9.5		31.3	2.5		7.5		34.1	8.7	K	9.1		32.6	6.3		9.2		50.8	50.1	K	9.5		33.8	25.3	
9.5		45.1	26.9		9.5		35.2	29.1	B	9.2		36.1	17.6		9.3	57	59.8	17.9		9.5		44.2	11.6	
8.6		50.6	0.0	K	9.3	2	13.9	39.0		9.0	25	3.3	0.5	K	9.5	58	20.3	33.1		9.1		45.0	34.5	K
9.5	40	13.7	16.9		9.5		28.4	5.5		8.6		3.5	53.4	K	9.5		51.3	28.0		9.5	25	0.3	13.5	
9.5	41	7.2	25.9		8.3		55.2	42.1	K	7.4		33.2	50.6	R	2.0	59	2.6	47.2	K	9.5	26	11.8	56.8	
9.2		17.5	3.8		9.5	3	12.0	29.6		8.5	26	31.0	39.7	K	9.5		6.4	17.7	B	8.2		12.4	51.9	K
9.5		35.7	28.4		9.5		14.7	56.2		9.2	27	0.7	45.9		9.3		7.2	20.1	B	8.1		23.6	19.4	K
8.1		47.9	20.4	L	9.2	4	15.1	1.5		8.8		21.7	18.3	K	8.3	1	27.7	32.5	K	9.5	27	10.2	32.8	
9.5	42	23.6	5.9		9.5		21.8	5.4		9.5	29	30.3	27.0		9.4	2	24.5	8.8	B	9.3	28	3.6	17.1	
9.1		28.9	4.4	B	9.5		31.9	34.9		9.5		32.8	18.0		9.4		46.5	5.7		9.5		21.3	43.5	
9.4		31.3	53.3		7.5		38.7	29.0	B	9.4	30	58.5	13.5		8.1	3	2.2	32.4	K	7.6		26.3	25.9	K
8.8	43	18.4	56.8	K	9.4		48.6	1.6		9.5	31	9.6	41.1		9.5		56.4	51.0		9.5		41.5	59.2	
8.0		21.8	4.5	R	8.6		54.5	41.5		9.3		18.4	12.3		9.5	4	1.5	5.5		9.4		48.2	49.3	B
9.3		33.2	42.0		8.2	5	5.2	4.5	K	9.5	32	8.8	54.7		9.4		41.7	8.7		8.3	29	32.3	30.3	K
9.0		33.7	4.6		9.5		26.4	10.3		9.5		46.9	38.3		9.4		42.9	2.7	B	9.5		53.5	6.8	
9.5		45.7	33.8		9.5		39.7	29.3		7.0	33	9.7	17.9	K	9.5		58.5	32.5	R	9.5		55.0	29.0	B
9.0		55.3	50.8	K	8.9		52.0	48.8		9.4		49.6	7.7		9.4	5	1.9	9.3		8.9	30	43.6	54.9	K
9.5	44	19.7	10.4		9.4	6	53.3	45.0	B	9.3		52.4	15.3		9.5		35.2	41.3		9.5	31	15.2	1.4	
9.5		21.7	16.5		8.3	7	26.4	6.0	K	9.5		53.2	23.9		9.5	6	29.5	3.3		9.2		23.2	31.8	B
9.5		26.2	41.4		9.5		58.9	54.0		9.5	34	21.4	3.8		9.1	7	29.7	30.4	K	9.3		36.3	16.3	
9.5		46.7	23.5		9.5	8	16.7	46.9		9.3		23.7	36.3		9.0		42.3	52.4		9.5		38.8	20.8	
9.5		55.4	11.8		9.5		36.1	2.2		9.0	35	9.2	15.6		9.5		59.2	27.9		9.2		59.4	19.0	B
9.5	45	3.3	41.8	B	7.0		39.0	48.4	K	9.3	36	33.0	37.6	B	9.2	8	0.0	33.1	K	9.5	32	27.6	1.2	
9.3		30.3	7.7		8.4		41.7	46.6	K	9.3		36.7	39.6		9.0		17.7	27.6	K	9.3		45.5	59.0	
6.0	47	14.1	50.6	L	9.5	9	45.9	56.3		9.0	37	39.3	20.4		8.9		37.7	37.1	K	9.2		56.8	53.5	
8.0		25.2	37.6	K	8.8		50.3	46.3		9.1	38	2.0	42.9	B	9.5	9	32.4	11.8		9.3	33	55.9	35.3	
9.4		44.5	7.5		9.5	10	33.2	43.5		9.5		2.4	40.4		9.4	10	0.2	28.4		9.5	34	23.9	26.4	
8.1		57.3	21.1	K	9.5		49.1	45.5		9.3		11.2	12.4		6.0		47.7	30.0	R	8.5		35.4	14.7	K
9.5	48	33.7	34.6		8.7		55.4	52.9	K	9.5		35.7	48.7		9.4	12	27.3	24.3	B	8.0	36	38.4	45.6	K
9.3	49	14.5	6.6		8.8	11	32.4	16.6		8.5	39	53.3	1.9	K	7.8	13	2.9	45.4	R	9.5	38	39.9	35.2	
9.3		17.7	0.4		9.5	12	1.7	32.5		9.5	41	57.7	23.1		9.4		12.6	33.1		6.5		57.2	21.2	K
4.5		29.3	38.7	K	9.5		58.5	7.3		9.3	42	10.4	6.9		8.7		24.5	57.8	K	9.0	39	2.9	23.0	
9.5	50	51.5	21.0		9.4	13	6.3	45.2		9.5	43	26.5	41.0		6.8		55.5	11.9	R	9.5		58.9	20.5	
9.5	51	40.8	26.4	B	9.5		39.2	16.0		9.5	44	16.8	57.2		9.5	14	59.7	19.7		9.5	40	13.1	29.5	
9.5		52.3	21.4		9.2		46.9	16.3	B	9.3		19.9	48.8	B	9.1	15	7.3	35.9		9.3		18.7	0.1	
9.5	52	3.2	32.5		9.4		53.4	57.8		8 9		27.4	13.5	K	9.3		11.0	4.8		9.5		37.9	42.6	
9.4		5.0	8.2		9.3	14	22.7	37.6		9.5	45	22.8	22.8		8.2		18.6	4.2	B	9.0		41.7	52.9	K
9.5		13.3	44.9		9.5		56.2	56.5		9.5		53.5	21.1		8.9		27.3	0.2	K	9.5	41	44.1	2.6	
9.3		18.9	38.0		9.5	15	39.8	34.6		9.3	46	2.8	48.3		9.5	16	10.8	29.9	B	9.5	42	19.4	35.0	

401—460				461—520				521—580				581—640				641—700			
	2u—3u		+22°		3u		+22°		3u		+22°		3u—4u		+22°		4u		+22°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
8.4	43	34.4	32.6	K	9.0	7	8.6	39.9	9.3	29	53.3	1.4	R	9.5	42	52.3	50.3		9.3	0	57.0	8.2	
9.5	44	53.8	7.3		9.5		33.4	30.3	9.5		53.3	8.2		9.0	43	0.2	47.9	R	9.5	1	34.3	9.2	
9.4		54.9	54.7	B	8.3		46.3	13.0	6.8	30	11.0	11.0	K	7.7		31.1	14.7	K	9.4		45.2	26.6	
9.4	45	6.7	47.9		9.5	8	18.5	1.1	9.5		56.7	57.1		9.5		35.7	52.5		9.5		54.7	42.1	
8.8	47	9.4	21.9	R	7.3		31.1	35.0	K	9.5	31	3.0	4.2		9.5	44	2.7	0.2		9.5	2	16.8	33.4	
8.8		18.8	0.5		8.7		31.1	18.4	R	7.8		3.3	22.4	K	9.5		21.0	2.8		9.5		30.2	26.5	
9.3		51.6	36.5	B	9.4		42.0	0.4		9.3		6.8	48.3		9.5		25.4	37.9		9.5	3	34.3	1.3	
9.3	48	13.6	27.5		8.9		49.4	24.8		9.3	32	27.2	58.5	B	8.7		47.1	42.1	K	9.5		57.3	20.1	
9.4		16.7	38.7		7.5	9	23.8	17.8	K	9.4		30.2	57.2		9.4		50.2	10.5	B	6.0	4	15.2	2.7	K
9.2	49	26.5	10.3	B	9.4	10	5.0	7.9		9.4		31.5	3.4		9.5	45	2.0	14.5		9.0		27.4	42.8	B
9.5		52.4	7.4		9.5	11	2.3	48.1		8.7	33	33.1	24.8	R	9.2		19.7	42.0	R	9.0		36.9	34.2	
9.4	50	8.9	52.5		9.0		35.5	55.4	K	7.5		44.6	19.6	K	9.5		40.1	26.6		9.2		45.7	21.8	
9.5	51	10.8	57.8		8.9	12	4.1	32.3		9.5	34	39.5	23.5		9.5		40.3	46.5		9.5	5	11.6	39.0	
9.4		57.3	27.5		8.8		14.6	57.9	K	9.5		51.3	46.5		8.5	46	10.5	46.0	R	8.3		23.2	20.4	K
9.5		59.1	46.7		8.0		18.1	39.3	B	8.9		57.9	16.9	K	9.5		11.1	14.2		9.4		46.4	29.4	
7.0	52	14.8	15.4	K	9.3		55.4	28.9		9.3	35	16.8	46.5		8.4		42.0	55.9	K	9.0		47.7	33.6	
9.5		39.9	3.8	B	9.5		59.2	46.1		8.9	36	17.8	48.9	R	9.3		44.0	37.1		7.0		53.9	5.0	K
9.5		49.7	10.0		9.5	13	39.8	1.9		9.0		27.5	15.9		9.1		57.3	33.8		9.3	6	13.7	5.6	
9.0	53	8.8	45.7		8.1	14	4.9	17.4	K	9.5		36.1	8.9		9.1	47	27.8	42.1	K	9.5		18.2	52.8	
9.5		25.9	57.2		9.1		49.3	41.5		9.3		39.7	40.4	R	9.5		29.4	17.0		9.5		22.7	36.5	
8.0		49.3	51.3	L	9.0	15	49.1	3.9		8.4		49.4	44.7	R	8.3		53.1	45.1	K	9.5		35.4	49.1	
9.5	54	9.3	5.7		9.0		56.5	50.6		9.5		52.0	44.2		8.0		53.1	15.3	R	9.5		43.2	18.7	
9.5		55.9	54.3		9.5	16	46.6	24.0		9.5	37	4.9	29.2		9.5	48	3.2	12.0		8.9	7	22.6	35.5	
9.3	55	2.2	41.9		9.4	17	3.7	51.5	B	8.0		9.3	14.9	K	9.5		11.7	41.1		9.5		57.0	24.5	
7.2		4.1	29.2	K	9.5		16.1	41.0		8.0		16.6	42.0	R	6.0		16.5	3.1	R	8.7	8	11.8	59.3	K
9.3	56	6.3	40.9		9.5		27.8	57.0		9.5		28.0	6.8		8.5		20.3	16.0	K	9.4		28.4	18.7	
9.4		9.9	29.3	B	9.3		35.4	28.0	B	9.3		33.0	45.7		7.0		29.7	45.8	K	9.3		31.4	45.5	
9.5		28.4	38.2		9.5	18	11.5	56.4		9.5		36.2	53.8		8.8	49	11.3	30.0		9.5		48.0	44.6	
9.3		38.3	26.1		9.0		21.7	44.7		8.6		40.3	40.8	K	9.5		43.0	29.8		9.2	9	29.3	55.6	
8.8	57	1.9	12.7		9.0		26.4	49.7	K	9.3	38	5.2	27.7	R	8.8		46.1	41.7		7.5		37.0	26.6	R
7.5		18.8	31.6	K	9.5		33.8	43.9		9.1		6.6	40.2		8.5	50	35.3	34.3		9.5		55.6	20.7	
9.3		28.8	58.3		9.5	19	10.0	23.8		9.5		12.7	28.7		9.3	51	17.1	48.5	R	9.5	10	20.7	49.6	
8.3		47.9	42.9	K	9.5		46.2	56.4		9.4		15.5	46.9		9.2		33.3	59.2	K	9.5		27.1	59.1	
9.5	58	13.9	54.5		9.3		49.1	9.0		9.4		18.4	45.9	R	9.0		37.9	45.5		9.5	11	0.0	38.0	
9.4		52.4	35.7		6.0		59.3	19.3	K	9.5		42.1	0.9		9.0		55.4	24.9		9.5		28.0	9.0	
9.3		53.8	57.7		9.4	20	52.8	57.4	B	8.5		50.6	28.7	K	9.5	52	14.3	2.7		9.0	12	3.4	36.1	K
9.5	59	8.4	47.4		9.4	21	11.5	52.4		9.5	39	21.3	21.1		7.5		22.7	48.6	R	9.5		5.2	0.6	
8.8		15.3	0.1	K	9.1		31.3	5.3	K	9.4		21.7	44.8		8.8	53	1.0	10.0	R	9.5		11.2	57.7	
9.5		26.8	31.9		9.0	23	2.0	0.4	K	9.4		21.7	59.2		9.5		25.6	34.6		9.4		23.7	39.0	
9.3		38.0	33.9	B	9.2		30.1	9.0	B	9.5		31.0	55.4		8.9		27.5	56.0		9.5		33.8	26.3	
8.8		42.7	5.7		9.3		31.5	17.5		9.5		38.8	6.5		8.1		42.6	1.1	K	9.5		42.6	49.1	
9.5	0	32.5	21.6		9.5	24	7.1	38.0		9.5		42.0	7.5		9.5		44.2	15.4		9.5	13	0.7	46.9	
9.5		47.1	28.1		9.5		16.8	28.3		6.9		46.8	58.8	K	9.5		51.0	20.1		8.8		40.3	19.3	K
9.5	1	10.3	34.3		8.2		56.3	52.5	K	9.5		50.5	4.8		9.1	55	9.4	33.4		9.2		46.4	59.7	K
9.5	2	27.4	37.1		8.5		58.1	54.2	K	8.5	40	10.6	48.6	K	9.3		12.9	23.1		9.5	14	10.4	29.3	
9.2		35.8	5.9		8.9	25	46.4	30.1	B	7.5		22.8	21.4	K	8.2		32.8	59.8	K	8.0	15	6.0	36.6	R
9.5		43.4	28.5		9.0		49.3	41.1		9.0		36.8	49.1	B	9.5		43.0	22.8		9.5		49.7	43.5	
9.3		48.9	13.0		9.5		50.1	50.7		9.0		38.0	57.4		9.4	56	32.6	5.8		8.0		50.8	24.8	R
9.5		58.3	6.3		8.5		51.6	2.1	B	7.8		38.6	10.1	K	8.3		47.1	46.1	B	9.5		52.7	39.3	
9.3	3	18.1	28.2		8.5		58.9	16.6	K	8.7		58.3	56.4		8.8	57	4.4	25.2		9.5	16	40.7	15.2	
9.0		22.4	28.2		8.6	26	23.4	36.3	K	9.2	41	5.5	37.0		9.5		17.9	50.5		9.5		46.5	53.5	
9.4		23.7	41.5	B	9.3		49.0	6.9		7.3		6.9	5.5	K	9.5		33.9	0.6		9.3		53.2	49.0	
8.5	4	1.1	20.5	K	9.5	27	2.4	21.4		8.4		7.1	53.9	R	9.2		42.1	26.5	B	9.4	17	22.8	49.7	
8.8		8.8	59.2		9.1		24.7	6.6	K	9.4		22.2	46.4	B	9.5		57.4	49.1		9.5		26.2	34.6	
8.8		35.8	12.7	K	9.5		38.9	0.6		7.8		30.5	9.6	K	8.5	58	26.7	54.3	K	9.5		28.2	34.6	
9.5	5	30.9	47.1		9.0	28	2.4	26.5	B	8.5		46.8	14.2	R	9.1	59	22.6	32.4		4.5		38.6	28.3	K
6.8		51.8	24.7	K	9.5		18.7	18.6	R	9.5		57.7	12.4		7.0	0	16.1	43.8	K	8.9	18	5.3	404.4	K
9.5		56.3	31.3		7.0		26.7	45.1	R	9.3	42	19.9	43.2		9.5		23.9	53.4		9.5		18.6	424.2	
9.5		58.7	9.5		8.5		28.6	9.8	K	9.0		27.0	58.7	R	9.5		26.5	6.1		6.2		37.5	389.3	K
9.5	7	5.9	13.7		9.4		39.2	1.9	B	9.5		40.4	15.0		9.3		49.8	54.0		9.5	19	7.2	9.7	

701—760					761—820					821—880					881—940					941—1000				
	4ᵘ		+22°			4ᵘ		+22°			4ᵘ—5ᵘ		+22°			5ᵘ		+22°			5ᵘ		+22°	
m					m					m					m					m				
9.5	19	45.6	7.5		9.5	41	52.4	13.7		9.4	57	8.6	6.5		9.5	11	57.0	51.0		9.5	24	27.1	38.5	
8.9		50.3	49.8		9.0	42	1.3	27.0		9.4		10.5	16.2		9.5		58.4	41.6		8.5		31.8	50.7	K
9.3	20	25.0	29.3		9.0		37.8	43.1	K	9.5		20.0	27.4	B	9.5	12	31.9	48.7		9.5	25	0.0	28.7	
9.5	21	10.9	28.3		9.4		43.3	43.9	B	9.5		49.5	44.1		8.8	13	11.6	48.1	K	9.5		0.5	38.2	
9.5	22	49.8	11.0		9.5	43	30.2	53.1		7.0		59.4	19.5	K	9.5		17.0	2.5		9.5		5.5	10.3	
9.5		53.7	15.2		9.0		36.5	1.2		9.5	58	6.9	21.7		9.1		46.3	1.4	K	9.1		14.9	19.2	
7.8		55.3	31.4	K	9.1	44	0.0	54.3		9.5		9.8	32.0		9.5		49.9	33.4		9.0		58.6	4.3	B
9.5	24	18.7	5.7		9.4		3.8	24.8	B	9.3		10.5	54.1		9.5		54.9	40.2		9.5	26	10.0	21.7	
9.2	25	45.6	48.4		8.8		55.5	46.5	B	8.7		27.0	13.0	K	9.5	15	19.8	57.7		8.3		10.7	28.1	R
9.1		52.0	23.9		9.2	45	6.0	31.8	K	9.1		37.5	31.6		9.1		29.6	1.1		9.5		17.3	25.1	
9.3	26	1.7	3.6	K	8.8		25.2	49.5	L	9.5		38.4	51.6		8.8		35.6	10.7		9.5		26.1	37.6	
7.4		5.3	22.5	S	9.2	46	2.5	44.3		9.5		55.8	10.9		9.5		50.2	50.4		8.5		40.5	20.4	K
9.0		9.7	34.9		9.1		7.3	49.2		9.5	59	33.9	26.5		9.0	16	4.1	50.1	B	9.3	27	16.0	20.9	K
9.5		33.4	11.5		9.4		35.4	43.8		9.2		34.7	4.6		9.5		4.3	51.3		9.5		19.3	16.0	
8.4		36.7	44.5		9.0	47	11.2	3.2	K	9.5		47.6	58.2		9.5		28.0	32.4		9.5		42.8	47.9	
9.5	28	34.0	18.6		7.3		25.4	21.7	L	9.5		57.0	3.1		9.5		54.7	3.7		9.3	28	9.0	21.5	
9.5	29	11.7	12.5		9.5		32.0	4.6		9.1	0	17.9	42.7		9.5	17	7.1	45.5		9.1		10.9	42.5	K
9.2		19.7	40.4	K	9.5		44.4	12.7		9.5		44.8	19.1		9.5		17.1	36.8		9.5		18.6	24.5	
9.1		27.2	18.3		9.5		46.5	21.9		9.1		59.6	50.9		9.5		18.2	38.0		8.9		21.5	1.3	R
9.5		53.7	12.5		9.5	48	24.6	50.4		9.5		59.9	5.8		9.0		19.5	41.7	B	9.5		38.1	22.1	
8.3	30	9.1	51.8	L	9.5		37.3	36.1		9.5	1	6.2	50.4		9.2		43.0	55.0		8.9		46.6	52.3	K
9.3		17.9	2.3		9.3		48.0	25.9		9.5		29.9	9.3		9.5		46.2	21.9		9.0		51.8	37.7	K
9.5		19.6	22.8		9.5		56.0	27.8		9.5		48.3	17.7	R	9.4		58.3	25.1	B	8.8	29	13.5	22.4	R
9.2		25.9	25.1	B	9.5	49	22.5	46.6		9.5		58.4	53.4		9.3	18	5.0	52.5		9.5		16.1	55.7	
8.5		32.3	22.1	K	9.5		32.4	4.9		9.5	2	21.3	29.3		9.5		5.9	11.4		9.5		24.2	11.6	
9.4		35.4	5.0		9.5		36.2	52.2		9.5		21.9	56.5		9.5		9.7	56.0		9.5		35.0	3.6	
9.5	31	12.7	39.3		9.5		47.6	47.6		8.7		27.5	54.0	L	9.0		12.0	49.8		9.2		38.4	35.5	B
8.7		16.8	42.8	K	9.5		56.9	41.5		8.4		38.2	11.6	K	9.2		15.0	15.2		9.2		42.4	19.4	B
9.5	32	9.6	4.0	B	9.5	50	20.1	55.5		9.4		49.3	24.9	B	9.3		31.0	58.4	K	9.1	30	16.2	4.2	R
9.3		33.5	41.1		8.9		30.5	31.5		9.5	3	12.9	1.9		9.5		57.5	18.1		9.5		18.0	35.0	
9.5		38.4	9.5		9.1		32.2	21.9	K	9.5	4	33.0	2.8		9.4	19	4.4	14.6		9.5		18.0	29.8	
9.5		41.3	50.6		8.9		51.3	50.9	B	9.5		39.0	7.4		8.4		20.3	48.6	R	9.5		25.1	3.3	
9.0		42.9	23.5	K	9.2	51	8.0	3.0		9.5	5	2.7	45.1		9.5		23.1	1.7		9.5		25.9	7.2	
9.0	33	0.1	20.0	K	9.3		20.4	55.2		9.4		22.6	45.4	B	7.7		39.6	37.0	K	9.5	31	5.9	35.8	
8.7		1.7	27.6	K	8.5		25.6	22.9	K	9.2		24.9	31.7	K	9.4		48.0	13.2		9.5		15.6	31.9	
9.3		24.5	47.7	R	9.5		33.4	42.6		8.6		34.8	30.2	K	9.4	20	1.2	38.0		9.2		15.6	40.5	B
8.5		30.8	39.5	R	8.8		48.9	24.5	K	9.5		49.5	39.2		9.5		4.7	50.1		9.5		16.5	43.0	
9.3		33.5	58.2	K	9.5	52	5.6	38.0		9.5		49.6	10.1		9.4		9.1	35.0		8.8		18.0	26.8	R
4.7		33.9	40.1	R	9.0		32.4	35.2	K	9.5		54.3	57.7		9.5		16.0	1.4		8.8		21.4	43.6	R
9.1		58.5	57.1	K	8.6		43.7	52.7	K	9.5	6	1.5	4.2		9.5		55.0	8.3		9.2		38.7	6.9	K
9.4	34	2.9	19.4	B	9.5		55.2	43.5		9.4		22.8	28.0	B	9.5	21	19.4	35.5		9.2		39.5	12.8	R
9.5		39.2	58.4		9.5	53	4.9	5.1		9.5		25.0	39.3		8.3		30.6	25.6	K	9.5		43.3	21.9	
8.0	35	13.1	40.5	K	9.5		9.5	13.8		9.5		29.9	14.0		9.4		50.8	48.6		9.2	32	13.0	11.5	
9.4		55.2	10.9		9.5		12.1	53.4		6.8		45.0	7.4	K	9.0		56.1	14.8	R	9.5		22.7	35.0	
9.3	36	12.8	45.7		9.5		16.0	40.7		9.5		45.1	10.7		7.5		58.0	20.7	K	9.5		26.1	40.4	
9.5		27.6	25.8		9.2	54	4.2	46.5		9.5	7	7.5	26.5		9.4	22	0.4	47.4		9.4		30.8	8.2	B
9.5		37.9	24.8		9.1		4.2	59.7		9.3		8.7	57.9		9.4		32.5	6.2		9.5		44.0	57.0	K
9.5	37	5.4	39.2	B	9.5		7.0	4.9		9.5		56.9	57.6		9.2		39.0	4.7	K	9.4		55.7	6.7	
9.3		32.5	44.2		9.4		10.4	5.2		9.5	8	1.9	36.0		9.5		48.9	55.6		8.0		58.6	48.2	R
9.5	38	3.6	4.1		9.5		24.9	25.8		9.5		11.9	47.3		9.5		48.9	38.3		9.5		58.0	9.1	
9.5		8.9	10.6		9.5		32.0	32.8		9.5		26.0	55.1		9.5	23	10.0	38.1		8.7	33	3.4	36.4	R
9.5		36.3	27.6	B	8.8	55	14.0	19.6	K	9.4		36.4	37.5		9.5		12.6	13.4		9.5		9.0	6.6	
9.0		37.2	54.5	K	9.4		16.2	34.5	B	9.5		44.0	25.1		9.5		20.2	15.0		8.2		14.3	28.3	R
8.7		46.2	3.2	K	9.5	56	1.5	4.6		9.0		48.0	42.0	K	9.4		29.7	28.0	B	9.5		15.2	0.8	
9.5	40	4.1	6.8		9.5		10.8	4.1	B	9.5	9	18.9	40.3		9.5		30.3	43.6		9.5		15.5	5.7	
9.2		4.5	3.3	B	9.5		41.5	31.7		9.5		21.9	52.7		9.1		33.8	49.5	K	6.8		18.3	35.0	R
9.5		47.5	13.5		9.4		51.5	43.4		9.5		28.7	58.9		9.5		42.2	59.7		9.4		18.9	56.7	R
9.2		48.3	54.5		7.5		54.4	52.3	K	9.5	10	9.4	56.4		9.5	24	19.0	21.9		9.5		22.5	35.6	
9.5	41	0.4	8.8		9.2	57	2.8	42.7	B	9.5		26.3	47.8		9.5		24.8	11.1	B	8.9		26.5	31.3	B
9.5		38.9	45.9		8.8		6.0	38.7		9.5		37.0	38.9		9.4		26.0	25.4	B	8.7		29.0	17.7	R

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	5ᵘ	+22°			5ᵘ	+22°			5ᵘ	+22°			5ᵘ—6ᵘ	+22°			6ᵘ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	33 47.2	1.4		9.4	42 17.4	7.9	K	9.4	49 52.4	23.6		9.5	59 3.7	59.4		3.2	6 7.6	32.8	K
8.8	34 10.0	50.1	K	9.2	25.5	32.4		9.1	50 14.2	42.9	K	8.5	3.8	1.3	K	9.4	11.7	26.1	
8.6	15.0	23.4	R	9.5	42.8	23.7		8.5	22.1	47.3	K	9.2	20.7	28.4	K	8.5	30.5	20.0	
8.3	15.4	35.7	R	9.5	44.0	38.6		8.9	26.3	57.9		9.2	32.6	6.8		9.3	32.9	19.3	
9.5	20.0	51.7		7.8	52.6	52.4	K	9.5	32.8	1.3		8.8	36.7	13.7		9.2	38.4	10.8	K
9.0	23.3	37.7	R	9.5	43 4.1	47.5		9.4	35.4	44.4		9.0	42.0	59.8		9.4	42.0	29.6	
8.7	36.4	8.3		9.5	6.0	7.8		9.5	35.8	47.9		9.0	48.4	37.9	K	9.5	43.3	48.6	
9.3	52.0	54.9		9.4	11.0	42.1		9.5	41.0	33.6		9.2	49.2	28.7		9.5	7 4.0	57.7	
9.4	57.8	15.5		9.3	12.4	25.6		9.5	47.2	10.3		9.5	0 10.6	9.6		9.5	11.6	21.5	
9.5	58.9	56.9		9.5	20.1	1.0		7.5	56.8	27.4	K	9.5	16.8	26.4	B	8.8	14.9	12.5	K
9.5	59.2	28.8		9.4	27.5	8.1		8.8	51 2.3	38.4		9.0	18.4	5.0		9.4	43.5	21.0	
9.5	35 0.1	35.5		9.1	39.2	41.2	K	9.5	11.6	3.8		9.5	21.0	15.9		9.5	48.3	46.4	
9.5	37.6	50.8		9.5	52.0	37.7		9.2	34.3	2.1		9.2	23.8	34.5		8.3	8 7.4	13.1	R
9.5	50.5	26.8		9.5	57.1	24.9		9.5	38.5	7.5		9.5	34.9	9.2		9.2	12.8	14.5	K
8.4	51.5	56.9	R	9.2	44 0.9	13.5		7.0	40.7	53.4	K	9.5	36.5	46.5		9.2	27.4	7.1	
9.5	36 7.2	25.5		9.5	4.0	27.5		9.5	55.2	22.2		9.3	39.9	27.3		9.4	34.4	51.5	
8.4	11.4	50.3	K	9.5	13.0	35.4		9.5	52 2.1	18.7		9.3	41.1	37.8		8.0	35.8	11.8	K
9.5	17.2	15.3		9.3	13.4	58.1		9.3	14.8	16.5		6.5	47.5	12.6	K	9.3	40.7	28.8	
9.5	17.3	5.9		9.5	27.5	15.4		8.9	25.6	32.1	K	9.5	1 6.9	59.0		9.5	42.0	48.4	
9.5	17.3	9.4		8.5	36.6	2.3		6.7	55.7	23.9	K	9.5	10.2	40.4		9.5	43.3	53.8	
9.3	24.3	8.1	K	8.8	36.9	45.4		9.5	53 12.9	14.0		9.5	24.1	2.2		9.2	51.5	45.9	
9.3	43.0	44.7		9.3	49.2	7.9		9.4	24.7	32.0		9.5	38.0	23.6		9.5	55.8	28.7	
9.5	37 3.2	25.1		9.5	50.3	12.8		9.1	32.1	9.3		9.4	38.1	19.6	B	8.8	9 8.6	27.2	K
9.2	4.4	37.9	K	9.0	52.0	23.9		9.5	48.9	35.0		9.5	48.6	36.0		9.5	18.6	59.5	B
8.3	23.6	42.6	K	9.0	52.0	22.7		9.3	50.4	50.8		9.3	55.2	30.7		9.5	12.8	16.1	
8.8	26.0	8.6		9.5	53.9	30.2		9.3	52.3	14.3		8.5	2 1.7	23.4		9.5	13.0	2.5	
9.5	32.2	58.0		9.5	45 0.6	46.6		8.3	57.2	2.6	K	9.3	4.0	43.5		8.8	14.3	42.4	K
9.5	57.5	10.8		9.5	9.7	12.9		9.3	54 5.3	16.6		9.5	15.7	25.4		9.4	17.5	56.0	
9.5	38 5.9	52.7		9.4	13.0	6.1		9.0	7.3	58.2		9.4	25.4	39.2		9.5	19.6	6.3	B
9.5	17.4	20.9		9.5	16.5	4.6		8.3	19.7	21.7	L	9.5	30.0	44.0		9.3	26.2	44.1	
8.2	29.2	28.1	K	9.5	30.0	46.3		8.5	26.8	20.5	L	9.5	34.3	25.6		9.5	42.5	22.5	
8.0	42.5	51.8	R	9.5	40.4	33.7		9.3	37.4	13.5	K	9.5	36.9	3.6		9.5	44.3	50.3	
9.5	55.4	45.7		9.3	42.7	48.0		9.4	55 22.1	29.1		8.8	44.1	32.2		8.6	45.4	43.8	K
9.5	59.0	15.0		8.9	45.8	55.2		9.4	25.8	38.2		9.5	51.1	3.5		9.5	47.3	2.2	
9.5	39 1.0	52.5		9.4	59.6	2.9		9.5	31.2	57.6		8.8	51.3	34.3		8.9	52.9	10.9	
9.5	12.5	10.3		7.6	46 8.1	29.0	K	9.5	34.7	9.9	B	9.5	3 4.3	44.0		9.5	10 20.4	23.9	
9.5	14.0	18.1		9.5	18.5	55.2		9.4	56 0.8	11.7		9.4	4.5	39.1		9.5	39.2	57.8	
9.4	15.6	27.6	R	9.5	29.4	35.2		9.3	8.4	2.0		9.5	12.9	4.3		8.5	47.4	53.0	K
9.4	15.9	30.1		9.3	58.1	59.5	B	9.3	9.1	18.9		9.4	21.4	12.0		9.5	11 0.4	53.7	
9.5	27.0	12.5		9.5	58.3	12.7		9.5	16.0	48.7		6.7	32.5	56.1	K	8.7	0.8	9.7	
9.5	32.4	31.3		9.5	47 6.6	28.7		9.5	47.6	27.3		9.2	43.5	39.7		8.8	1.5	21.9	
9.5	42.6	52.9		9.5	12.0	18.9		9.3	48.5	16.6		9.3	50.0	29.0		9.3	6.4	53.7	
9.5	52.0	37.5		9.5	14.3	19.2		9.5	56.9	38.1		9.3	48.7	21.8		9.0	21.4	54.4	K
9.4	40 5.4	25.9	R	9.1	17.5	6.3		9.4	57 8.8	27.8		9.0	56.8	0.8		9.5	30.7	21.5	
9.5	30.3	31.0		9.5	31.4	16.5		9.5	9.5	39.6		9.5	58.7	1.1		9.1	37.3	48.5	
9.5	33.2	3.1		9.5	36.1	18.0		9.5	14.2	49.1		8.7	4 6.6	29.5		8.6	39.9	29.4	K
9.5	38.0	50.3		9.5	44.9	25.3		9.5	32.8	43.4		9.4	40.0	32.1		9.3	12 13.3	16.3	
8.8	48.0	40.7	R	9.4	48.8	42.9		9.1	43.3	53.1		9.5	49.1	14.6		9.5	23.4	2.0	
9.5	59.4	46.1		8.2	48 20.8	48.6	K	9.5	51.1	2.4		9.4	54.6	41.5		9.5	23.6	36.7	
8.9	41 6.0	55.7	R	8.5	29.0	20.5		9.5	58 16.8	45.3	B	9.5	58.3	7.6		9.5	23.6	42.4	
8.5	12.1	54.8	K	9.5	39.0	10.6		8.8	21.2	10.8	K	9.4	5 6.5	41.0		8.7	24.0	13.7	K
8.5	17.0	30.1	R	9.5	58.0	13.1		9.3	26.0	25.6	K	9.5	12.7	19.2		9.5	38.5	46.3	
9.3	17.7	3.4		9.5	49 9.0	47.9		8.5	26.1	7.3	K	9.5	13.1	32.0		9.5	39.9	5.8	
9.5	28.5	8.8		9.2	10.2	50.9	B	9.2	27.1	46.9		9.5	20.7	4.0		8.1	13 1.3	58.2	K
9.5	37.4	26.5		9.5	11.4	3.7		9.0	30.6	45.2		9.5	28.4	50.1		9.5	8.6	38.9	
9.3	47.3	36.2		9.4	14.1	52.9		9.4	37.6	34.5		9.5	37.0	14.5		8.8	15.6	37.4	R
9.1	42 0.4	24.9		9.5	16.3	55.2		9.5	40.9	2.5		9.1	38.7	26.4		9.5	18.3	14.6	
9.5	9.8	1.3		9.2	21.8	3.6	K	8.8	53.6	37.0		9.3	46.0	56.7		9.5	19.1	9.4	
8.4	10.3	27.6	K	9.2	39.5	13.0	K	9.5	59 0.5	59.5		9.3	52.7	24.0		9.4	37.0	46.5	
9.5	17.0	34.7		9.4	40.0	58.8		7.5	0.5	43.4	P	9.1	53.8	9.5		8.8	39.9	2.6	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ᵘ	+22°			6ᵘ	+22°			6ᵘ	+22°			6ᵘ	+22°			6ᵘ—7ᵘ	+22°	
m		′		m		′		m		′		m		′		m		′	
9.3	13 45.0	53.7		9.5	22 58.6	31.4		8.6	30 46.9	7.3	K	9.5	40 13.6	34.0		9.5	51 15.1	17.4	
9.4	59.5	47.7		9.3	23 2.5	53.5		9.5	51.7	19.1		9.2	24.8	16.0		9.5	25.8	49.7	
9.0	14 11.5	55.5		9.5	6.1	49.1		9.5	31 3.7	25.1		9.5	28.8	9.6		9.4	26.9	56.5	
3.0	13.4	34.8	R	7.2	14 0	16.8	K	8.8	8.6	20.6	K	7.5	30.7	27.9	K	9.5	29.0	38.3	
9.5	18.8	57.7		9.5	24.7	20.7		9.5	20.2	17.5	B	8.7	35.3	18.9		9.2	29.8	42.7	K
8.4	37.0	3.3	K	9.3	26.0	9.7	B	9.4	24.1	1.2		9.0	51.6	29.9	K	9.3	33.5	1.5	
9.1	40.9	6.6	K	9.3	39.7	7.4	B	9.3	29.6	32.4	K	8.7	56.0	59.9		9.5	57.6	13.4	
9.5	50.6	10.4		9.4	43.2	57.5	B	9.0	32 8.4	59.4	K	9.3	56.0	11.2	B	9.5	52 1.5	47.4	
9.2	54.4	19.4	B	9.4	43.7	56.4		9.4	13.3	51.2		9.4	41 2.6	12.7		8.5	12.5	12.3	K
9.5	15 0.0	6.2		9.5	44.6	55.8		9.5	14.5	46.5		8.4	8.8	13.9	K	9.1	29.7	32.6	K
9.0	0.7	27.6		9.5	47.5	15.9		9.5	14.5	2.1		9.5	10.9	43.0		9.4	46.1	54.0	
9.2	5.1	10.4		9.3	53.5	1.7		9.3	18.4	56.4	K	9.5	11.6	40.0	B	9.4	57.3	48.1	
9.5	16.4	58.3		9.5	58.4	13.4		9.5	20.7	27.6		9.5	42 3.6	51.9		7.7	53 13.0	15.0	K
9.4	19.6	30.0		9.5	24 0.0	57.6		9.5	23.8	10.2		9.5	22.7	21.3		9.4	27.4	43.2	B
9.5	23.7	8.5	B	9.5	3.0	56.5		9.5	44.1	42.3		9.5	28.4	56.1		9.1	28.2	46.7	
9.3	26.6	36.5	K	9.4	21.5	47.6		9.5	55.6	4.4		9.5	44.8	14.3		9.2	33.8	10.0	K
9.5	45.7	27.5		8.8	38.4	38.1	K	9.5	33 1.4	30.7		9.5	50.6	29.6		9.4	35.4	42.2	
9.5	53.0	6.5		9.5	39.0	7.8		9.1	8.5	47.0	K	9.5	43 7.6	8.3		7.0	35.9	17.5	K
9.5	16 14.8	39.9		9.1	41.4	38.9	K	9.1	9.5	40.8		9.5	17.8	30.5		9.1	54 7.1	19.4	K
9.0	27.2	8.0		9.3	48.3	16.4		9.5	13.9	4.5		9.3	44 1.7	25.4		9.5	24.7	51.1	
9.0	31.1	6.0	B	9.5	51.0	29.1		9.4	34.0	55.8		9.4	13.7	25.4		9.1	30.1	37.0	
9.3	48.3	35.6	K	9.2	55.9	7.4		9.4	35.0	25.2		9.5	16.8	38.0		9.5	55.8	11.2	
7.7	49.2	32.0	K	8.7	25 12.7	26.7	L	9.5	39.6	31.7		9.5	20.0	51.6		9.5	55 49.4	59.4	
9.5	17 4.0	37.5		8.0	19.8	13.3	K	9.5	42.5	41.3		9.5	26.0	0.1		9.4	50.4	27.5	B
9.5	7.4	51.3		9.5	21.4	53.2	B	9.1	49.8	15.6	K	9.2	36.5	11.3		9.5	56 33.0	14.5	
8.5	30.5	48.1	K	8.0	22.8	13.9	K	9.2	55.9	37.4	K	8.4	38.7	19.3	B	7.1	35.7	52.2	R
8.7	38.5	48.8	K	9.3	26.9	12.3	B	9.5	55.9	2.0		9.3	49.8	15.4		9.3	57.8	54.5	
9.4	18 16.9	57.5		9.0	42.5	9.2	K	9.0	34 35.6	37.5		8.5	51.4	56.9	L	9.5	57 30.3	25.1	
9.5	20.6	13.3		9.5	56.3	43.7		9.1	51.5	22.2	K	9.4	45 5.5	41.2	B	8.5	33.2	54.3	K
8.8	27.0	7.6		9.4	26 6.5	33.7		8.7	35 0.6	36.2	K	8.8	20.2	26.2	B	8.8	48.7	23.0	K
8.5	31.7	4.3		9.5	7.3	12.0		9.3	6.4	52.4		9.2	28.2	13.3	B	9.5	58.7	6.2	
9.4	34.7	26.6		9.1	20.9	58.3	R	9.5	29.1	49.2		9.0	36.3	59.8		9.4	58 6.9	38.8	B
9.5	44.0	38.9		9.3	33.6	3.4		8.5	39.5	43.0		9.5	53.7	28.8		9.5	22.9	23.9	
9.5	49.5	53.9		9.4	34.0	21.4	B	9.4	39.6	58.1		9.5	55.9	8.5		9.5	28.9	12.7	
9.0	52.6	11.9		9.5	45.9	2.0		9.5	43.7	4.6		7.9	46 20.5	43.8	K	8.8	33.4	36.5	
9.4	53.6	33.8		9.5	27 1.7	1.3		7.2	36 11.0	58.6	K	9.5	26.3	58.9		8.4	34.0	44.0	L
9.5	19 17.4	1.6		9.0	6.5	42.2	K	9.5	11.4	50.4		9.5	36.2	25.8		var	37.7	54.8	L
9.1	17.4	10.0	B	9.4	9.3	33.0		8.8	11.8	10.7	K	8.7	38.8	16.7	K	8.9	50.3	19.3	B
9.4	21.2	7.4		9.4	20.8	26.5		9.5	12.7	19.3		9.4	59.0	21.4	B	9.5	52.7	46.5	R
9.5	24.4	53.9		9.1	32.8	15.7		9.5	16.3	49.0		~~9.5~~	~~47 34.6~~	1.9		8.9	56.0	23.8	
9.5	54.8	45.4		9.5	46.2	6.5		8.5	17.9	56.2	K	9.3	48 23.4	56.9	B	9.1	59 2.8	58.4	K
8.8	20 7.2	36.6	K	9.3	58.9	46.0		9.2	26.7	14.1	K	9.5	27.8	55.0		9.3	3.5	20.2	
9.0	30.5	55.9	K	9.4	28 11.4	33.5		9.5	36.5	48.8		8.8	34.5	1.7		9.3	21.1	20.6	
9.5	35.6	34.0		9.1	15.8	9.5	K	9.4	44.6	37.0		8.9	39.2	53.5		9.5	22.7	58.2	
9.5	52.7	27.1		9.2	23.6	32.7		9.2	55.2	44.4	K	9.5	57.7	9.9		8.5	27.7	6.6	K
9.5	21 3.6	53.8	B	9.5	26.9	56.0		9.5	56.8	51.8		9.3	59.6	4.8		9.2	28.0	26.4	
9.0	7.4	52.0	K	9.2	40.7	8.1		9.5	57.1	31.8		9.0	49 3.7	1.3	B	8.7	32.0	8.4	
9.5	14.5	46.1		7.8	45.8	15.7	K	9.5	37 24.4	56.2		9.3	10.6	6.0		9.0	35.0	25.6	K
9.5	24.7	51.3		9.5	48.7	27.0		8.8	35.2	42.9	K	9.3	10.7	42.8		9.0	50.3	12.7	
9.5	30.0	57.3		7.7	52.4	49.5	K	9.3	46.2	50.8		9.3	22.1	9.7		8.0	55.3	10.0	K
9.4	32.4	51.2		9.5	53.0	51.7		9.5	38 10.7	55.1	B	7.3	27.5	39.5	B	9.4	0 12.9	9.3	
7.5	36.6	38.1	K	9.5	29 33.4	14.2		9.4	23.6	33.2		9.5	28.9	25.1		9.5	25.8	37.1	
9.5	47.5	35.1		9.5	30 3.2	50.2	B	7.2	29.7	20.7	K	8.8	42.6	26.4	B	8.2	29.8	3.1	K
9.5	49.2	18.3		9.4	4.2	0.4		9.5	39 4.6	32.5		9.5	50 15.9	52.1		9.1	47.7	7.0	K
9.5	56.6	3.3		8.9	13.4	40.0		8.7	14.8	17.7	K	9.1	26.3	20.9		9.3	57.0	7.0	K
9.0	59.5	0.2	K	7.0	21.4	9.1	K	9.4	27.4	52.0		9.5	36.8	38.1		8.0	1 1.8	35.5	B
9.5	22 19.6	31.4		9.5	21.9	4.2		8.5	37.7	30.3		9.0	39.8	29.0		9.5	6.6	45.1	
9.5	21.0	58.3		9.3	27.6	33.1		9.4	44.1	9.2	B	8.9	45.0	51.8	K	9.3	38.3	57.3	
9.5	29 0	59.9		9.1	42.4	16.3		9.4	47.3	41.2		8.6	48.5	26.3		9.5	46.4	36.3	
9.3	31.1	53.5	B	8.8	45.5	45.6		9.0	54.8	44.0	B	9.5	51 2.9	23.9		9.5	2 0.5	49.0	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	7ᵘ	+22°			7ᵘ	+22°			7ᵘ	+22°			7ᵘ	+22°			7ᵘ—8ᵘ	+22°	
m				m				m				m				m			
9.5	2′ 3.6	28.3		8.7	14′ 27.5	15.2	K	8.9	25′ 41.1	22.7		9.5	40′ 22.7	27.6		9.5	54′ 27.5	24.4	
9.5	26.7	44.0		9.0	30.5	35.2		9.5	26 18.7	10.6		9.3	28.3	36.4		8.8	45.8	56.9	
9.5	47.0	3.2		9.4	15 15.7	28.2	B	9.5	43.3	7.8		9.5	48.5	34.6		9.2	46.4	17.8	
9.3	51.3	31.8		9.2	19.2	41.1	B	9.4	47.7	23.3	B	9.5	41 26.7	22.3		9.3	50.7	14.8	B
9.3	51.5	54.3	B	9.5	26.0	39.2		9.5	51.5	26.8		9.5	47.8	31.2	B	6.3	55 16.9	28.5	K
9.4	54.9	52.3		9.4	46.1	39.8	B	9.5	27 0.8	4.1		9.3	48.0	3.9		7.3	28.8	6.5	K
9.4	3 7.1	50.3		9.5	58.0	13.3		9.4	2.1	42.6	B	9.5	48.0	20.8		9.2	57.0	40.4	
9.5	17.0	39 9		9.5	16 0.8	21.0	B	9.5	18.7	44.1		9.5	49 8	32.0		9.5	56 43.5	47.3	
8.0	21.7	30.7	S	9.4	5.1	39.2		9.5	27.0	56.2		9.4	42 8.4	26.5		9.5	48.9	6.6	
9.0	27.1	14.8		9.5	9.2	19.2		9.1	31.5	20.1		9.0	19.9	31.0	K	9.5	52.6	37.4	
9.3	55.6	52.2		9.5	21.8	4.6		9.5	40.0	9.3		8.1	26.2	36 6	K	9.5	57 46.3	43.3	
9.0	4 3.1	8.4	K	9.4	23.1	22.6		9.3	48.9	21.3		8.7	49.0	57.9		8.3	57.1	29.6	L
9.0	15.4	39.7	K	9.3	35.4	50.6	K	9.5	28 19.2	8.0	B	9.0	58.5	30.3	K	9.3	58 0.5	59.4	B
9.5	31.9	30.3		9.5	41.5	19.7		9.0	20.2	53.8		9.0	43 2.0	48.8		7.5	1.3	52.4	K
9.5	45.9	32.7		9.2	55.9	22.7		7.1	29 0.8	40.2	K	9.3	7.0	39.0	B	9.2	4.2	57.1	
9.4	5 2.8	37.2		9.3	17 12.7	26.1		9.5	3.0	12.1		9.4	15.7	1.1	B	9.4	11.9	40.3	B
9.5	39.5	40.7		9.5	19.0	51.4		9.5	10.3	1.8		9.1	18.4	38.2	K	9.5	24.0	1.9	
8.8	53.0	58.6		9.2	21.5	23.4	K	9.5	18.1	34.4		9.5	40.0	59.0		9.4	39.2	7.8	
9.5	6 27.0	27.2		9.3	22.7	11.5		9.3	41.0	33.9		9.5	44 10.0	12.9		9.5	54.8	44.3	
7.2	54.5	12.8	K	9.2	27.4	10.3	B	8.9	50.8	3.0	K	9.0	16.8	38.9	L	9.4	57.8	38.9	
8.5	56.1	24.1	K	9.5	32.5	45.7		8.8	52.7	38.1		9.4	20.2	11.4		9.5	59 8.5	14.5	B
8.6	57.2	47.4	K	9.5	34.4	56.7		9.5	30 30.5	24.5		9.5	23.0	55.2		5.4	14.0	1.0	K
9.5	7 5.2	41.6	B	9.3	52.3	14.0		9.3	31.1	54.6		6.8	24.5	41.7	K	9.0	26.6	51.0	K
9.0	16.4	16.5	K	9.5	18 6.5	8.3		8.5	51.8	2.1	K	9.3	45 42.5	39.7		9.4	35.0	42.8	B
9.5	24.9	38.6		9.3	29.1	34.8		9.5	52.0	56.1		9.3	46.0	46.1		9.5	43.0	39.9	
9.0	29.4	55.4	K	9.5	45.0	40.8		9.5	31 15.0	20.9		8.9	47.5	56.1		9.5	0 5.5	1.9	
9.2	30.0	36.1		7.0	19 0.8	26.5	S	9.2	45.7	38.9	B	var	46 29.8	22.7		9.5	12.5	29.4	
9.5	53.0	9.9		9.3	25.7	24.5		9.5	32 10.8	44.7		8.2	35.2	2.6	K	9.4	21.1	42.2	
9.5	8 5.1	13.0		8.3	26.2	56.8	K	8.3	20.8	8.2	K	9.5	47 28.0	46.1		9.5	25.6	9.0	
9.3	5.1	56.7		8.8	55.8	32.9		9.5	29.5	20.4		7.7	43.7	57.4	K	9.5	46.8	31.9	
9.4	11.4	9.2	B	9.3	57.0	48.5		7.5	56.8	27.1	K	9.3	50.0	13.4	K	9.5	48.7	12.5	
9.3	43.9	3.1		9.2	20 0.6	48.9	K	9.5	33 14.9	7.2		9.5	54.8	0.3		9.5	1 4.2	48.5	
9.0	48.8	27.6	K	8.9	2.3	8.4	K	8.7	59.0	11.8	K	8.7	56.0	14.8	K	9.5	34.5	25.3	
9.5	50.9	35.0	B	8.0	14.7	7.2	K	7.0	34 4.8	33.4	K	9.4	58.9	41.9	B	9.5	2 6.5	34.3	
9.5	9 18.8	26.3		9.3	47.0	16.9		9.5	23.4	58.0		9.5	48 29.7	56.0		9.5	8.3	42.8	
9.5	32.4	12.4	B	9.3	49.7	39.6		6.8	43.8	44.8	K	9.5	38.9	11.9		9.4	36.7	31.1	
9.5	33.5	9.4		9.2	21 4.0	6.3	K	9.5	35 27.2	26.8		9.2	43.8	5.6	K	9.4	37.2	34.1	B
9.5	10 17.3	50.4		9.5	12.5	6.3		9.4	31.7	3.3		9.5	56.8	57.2		9.5	56.7	34.3	B
9.0	18.6	58.3		9.2	19.3	56.0		9.1	47.4	13.4	K	9.5	49 22.5	7.7		9.5	3 13.5	58.8	
9.5	27.8	48.2		9.5	36.0	17.7		8.8	53.6	58.8		9.5	35.6	47.2		9.0	4 14.7	49.0	K
9.5	29.3	58.3		9.5	53.9	24.8		8.0	36 4.8	47.9		9.4	42.3	46.9	B	9.3	51.9	1.7	
8.0	44.3	16.6	K	9.5	55.0	41.9		8.9	11.5	10.4	K	9.4	47.7	47.6		9.2	5 3.4	20.6	
9.0	11 20.0	25.9	K	9.0	57.7	21.7		9.5	23.7	33.5		9.5	50 0.8	34.4		9.4	4.3	5.1	
8.9	23.9	40.4		9.4	22 14.4	23.6	B	9.2	40.9	4.7	K	9.5	34.3	17.6		9.5	7.2	35.5	B
3.5	27.8	14.9	K	9.5	39.9	15.6		8.9	48.8	56.0	K	9.5	50.7	56.2		9.5	11.1	33.5	
9.5	43.2	10.5		8.5	42.7	35.1		9.5	37 14.8	15.2	B	9.5	51.5	9.8		8.5	17.2	43.4	K
8.7	47.1	44.2	K	9.2	23 12.7	28.0		9.4	18.5	19.4		9.3	51 2.9	38.8	B	9.0	31.6	6.0	B
9.5	58.1	33.4		9.0	17.8	37.4		9.5	45 0	20.7		9 5	21.5	55.7		9.5	32.5	56.8	
9.5	12 6.2	58.1		9.4	21.1	25.4		9.0	53.0	54.2	K	9.5	52 7.4	45.3		9.2	6 2.5	46.5	K
9.0	15.7	51.9	K	9.3	35.8	30.4	B	9.5	38 25.0	6.4		9.5	16.6	52.9		8.9	7 8.1	18.9	K
9.5	40.0	48.2		9.3	39.3	39.8		8.6	29.8	28.2	K	9.5	18.5	13.8	B	8.9	26.9	0.2	K
9.5	43.5	6.6		9.5	50.2	1.4		9.5	42.4	25.0		8.4	29.9	26.2	K	8.5	33.7	37.1	L
9.5	13 18.0	16.9		9.4	53.1	29.1	B	9.5	46.4	26.0		9.3	41.4	54.1		9.5	50.1	26.5	
9.5	25.0	26.6		9.5	57.0	34.8		9.5	51.2	29.0	B	8.6	47.5	45.1	K	8.4	8 25.1	21.1	
8.1	30.2	54.9	K	9.4	24 12.3	34.3		9.5	57.7	1.5		9.3	51.0	44.3	B	9.4	31.2	51.4	
9.5	57.0	7.3		9.5	19.0	19.7		9.5	39 23.5	50.0		9.5	53 3.0	51.4		9.5	41.8	24.4	
9.5	59.5	10.7		9.0	21.9	51.8		9.5	45.3	39.8		9.5	18.8	5.1		9.2	48.1	4.7	
9.0	14 3.8	21.0	K	9.5	25 17.0	24.4		9.5	54.1	43.4		9.5	21.0	12.1		9.3	9 10.0	57.5	
9.3	8.6	30.7		9.3	21.4	6.9	B	8.5	58.0	46.3	K	8.0	59.9	16.5	K	9.0	52.6	52.8	
9.5	19.7	56.0		9.5	24.5	20.6		8.0	40 2.4	15.8	B	9.3	54 19.8	14.9	B	8.6	55.2	39.6	

8ᵘ—10ᵘ **+22°**

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	8ᵘ	+22°			8ᵘ	+22°			8ᵘ—9ᵘ	+22°			9ᵘ	+22°			9ᵘ—10ᵘ	+22°	
m		′		m		′		m		′		m		′		m		′	
9.2	10 14.0	2.6		9.2	28 8.3	18.2	K	8.1	47 37.7	14.5	K	9.5	13 40.5	27.2		9.1	46 20.1	8.9	K
9.4	18.8	15.5		7.7	12.2	40.9	K	9.1	44.2	8.3	K	8.2	44.8	6.4	R	9.2	39.8	5.9	K
9.5	20.7	47.5		9.2	18.7	13.7	K	9.5	45.4	58.9		9.2	46.9	58.3	B	9.4	44.9	28.3	
9.5	29.2	9.0		9.3	48.4	49.0		9.5	45.8	42.1		9.2	47.2	1.8	B	9.5	48 6.6	20.0	
9.5	51.1	55.4		8.6	54.3	29.0	K	8.9	48 0.7	24.8	K	9.5	14 8.5	8.6		9.4	39.3	11.3	
9.2	53.2	47.1		9.5	29 18.1	31.2		9.5	11.5	59.6	B	9.0	52.0	56.8		9.5	49 40.4	34.2	
9.5	56.4	1.3		9.5	32.9	44.5		9.2	26.3	26.5		9.1	15 1.5	49.2	K	8.2	50 23.4	59.3	K
9.4	11 3.4	8.8	B	9.5	47.6	54.2		9.5	40.1	33.7		9.5	16 13.1	43.1		6.7	51 24.3	1.6	K
9.5	21.0	22.2		9.5	30 29.2	40.3		6.7	42.7	24.8	L	9.2	39.2	20.3		9.5	30.8	24.2	
9.4	29.0	17.8		9.5	33.5	18.3		9.5	49 7.0	18.9		9.5	17 32.3	11.3		9.5	41.6	7.0	
8.9	35.5	23.5	B	9.4	43.9	11.4		9.5	50 8.3	18.2		9.4	58.8	29.9		9.1	52 1.6	17.3	
9.5	54.4	0.9		9.5	31 56.7	3.0		9.5	43.5	48.8		9.4	59.0	15.0		9.5	25.4	21.2	B
9.5	12 11.7	38.9		9.3	32 33.0	32.2		9.3	51 17.4	49.8		9.4	18 22.1	8.6		8.7	28.8	10.1	K
8.0	35.6	29.3	K	9.3	39.6	4.1		9.3	21.0	32.3		9.1	19 52.6	5.3		9.0	51.6	32.3	K
7.5	57.2	22.1	K	9.1	33 2.6	47.0	K	9.5	52 4.3	28.6		9.5	21 19.4	58.5		9.1	57.4	16.0	K
8.6	13 2.6	4.2	K	9.0	34 13.8	34.8		9.3	22.1	20.2		9.5	58.8	51.3		8.8	53 12.8	41.4	K
9.1	31.8	33.7		9.4	32.1	10.0		8.5	23.8	1.9		9.4	22 4.4	56.4		9.4	27.4	19.7	
8.9	44.2	3.6	K	9.5	40.8	56.2		9.5	54 15.0	31.7		8.9	7.0	12.4	K	9.3	30.7	7.1	
9.4	14 46.8	20.1		9.3	51.0	21.9		7.6	24.5	5.3	K	9.2	10.1	57.4		9.5	38.9	52.0	
9.1	54.7	19.1	B	9.5	59.3	11.3		9.4	27.9	45.3	B	7.0	12.5	28.1	K	8.6	54 2.4	24.5	K
9.2	57.8	19.2	B	9.3	35 38.6	25.8		7.4	28.4	49.5	K	9.4	23 55.8	7.4		9.1	19.2	58.2	K
8.6	15 6.7	17.1	K	9.5	36 20.1	2.4	B	9.5	55 52.7	24.4		7.2	24 0.5	29.6	L	9.2	24.4	2.5	
9.1	10.2	33.4		8.6	29.9	22.8	K	9.4	56 8.0	32.5		9.3	17.5	16.5		8.8	26.1	12.7	K
9.4	25.3	4.9		9.5	31.5	53.7		9.5	19.6	5.8		8.8	25 0.5	49.6	K	5.3	44.4	39.7	K
9.2	16 4.4	11.9	K	9.4	37 3.8	11.0		9.5	24.7	24.9		9.5	26 18.4	11.0		9.3	55 25.9	2.0	R
9.0	19.7	15.6	K	9.3	9.2	8.3		9.5	24.8	10.3	B	9.5	34.0	30.2	B	9.1	48.0	12.5	K
9.4	19.7	52.4		9.5	52.3	3.2		9 5	44.8	58.1		9.4	55.2	34.2		8.8	56 20.5	52.5	K
8.9	42.7	17.9	K	7.4	38 2.1	53.0	K	9.3	58.3	7.6	K	7.5	28 39.3	53.8	K	9.5	26.9	56.2	
8.5	48.6	49.5	K	8.4	10.9	9.5	B	9.3	57 17.2	8.4	K	9.4	51.2	0.7		8.6	28.1	8.7	K
9.2	55.6	47.3		9.0	25.1	9.7	B	9.0	58 17.2	35.4	B	9.0	56.3	2.6	B	8.8	31.4	13.5	K
8.9	58.0	56.9	K	8.6	50.6	4.3	K	7.7	32.1	58.8	B	8.4	57.5	34.8	K	8.9	35.4	20.8	
9.1	18 16.3	48.8	K	9.3	39 25.2	9.0	K	9.0	57.1	31.2		7.6	30 32.3	11.6	K	9.2	57.6	1.1	
9.5	46.5	21.2		9.5	25.7	58.2		9.5	59.2	46.2	B	9.5	51.0	46.0		8.5	57 1.2	31.7	K
9.5	19 6.8	14.7		9.5	48.0	29.6		9.5	59 9.0	50.4		8.0	31 23.4	50.6	K	8.2	7.1	40.4	K
9.1	27.8	35.3		9.5	40 15.0	47.9		8.8	13.8	12.4		9.5	33 26.0	7.9		9.5	23.2	37.6	
9.4	48.5	42.4		9.4	20.3	5.4	K	9.5	32.1	29.5		8.5	54.6	12.9	K	9.3	23.4	34.2	
8.8	20 37.1	43.3	K	9.0	27.9	44.2	K	9.5	50.2	51.5		9.5	54.9	37.1		9.4	35.8	11.2	
9.3	21 20.0	23.9		9.0	32.7	46.5	K	9.1	0 10.3	15.9		9.0	34 4.0	23.7	K	9.5	49.5	34.5	
9.3	24.3	55.4	K	9.0	43.6	25.5	K	9.1	14.9	59.0	B	9.3	13.0	26.5	K	7.5	58 8.0	13.2	K
9.5	24.3	14.8		9.1	44.9	59.9		8.7	59.0	48.6	K	9.5	47.3	26.5		9.5	59 9.9	57.8	B
8.8	26.4	30.0		9.3	42 0.0	1.6		4.8	1 3.2	36.9	K	9.0	35 0.9	52.8		9.0	25.4	49.0	K
9.1	58.7	32.1	K	9.4	14.3	39.0		9.5	32.0	47.3		9.5	34.2	29.3		9.4	29.4	49.7	
9.5	22 10.6	42.4		9.5	21.6	47.0		6.5	2 3.0	34.6	K	9.4	35.7	25.8		9.4	0 2.4	17.0	
9.5	11.0	20.5	B	9.0	43.7	46.3	K	9.4	7.8	48.9		8.3	44.5	44.7	K	9.5	53.7	42.5	
9.5	48.2	43.8		9.4	43 1.2	19.6		7.9	11 7	14.3	K	9.5	36 38.6	2.0		7.8	1 8.4	30.8	
9.5	23 2.5	54.7		8.3	38.9	32.9	K	9.3	3 44.2	51.5		9.4	45.9	35.8	B	9.0	26.1	30.4	
9.3	20.6	14.8		9.4	58.5	59.1		9.5	4 10.9	54.4		9.2	37 20.5	49.3		9.1	2 28.0	4.7	K
9.2	22.5	53.4		9.4	44 8.0	32.2		9.5	57.7	57.2		9.4	38 10.7	58.7		9.3	59.1	26.3	
8.5	32.4	10.4		9.1	20.8	55.9	K	9.2	5 32.3	56.0		9.4	31.9	20.1		8.8	3 24.7	27.7	K
8.9	24 2.0	53.9	B	9.1	26.9	33.2	K	9.3	7 6.9	51.8		9.5	39 40.4	3.0		8.7	4 3.6	2.8	
9.5	37.1	51.0		9.5	41.3	34.9		9.3	16.2	48.3		9.0	40 40.8	43.4	K	8.6	16.8	56.9	K
8.8	42.2	21.9	K	8.8	45 34.2	19.6		8.0	9 32.7	23.7	K	9.4	42.0	58.9		8.8	38.2	2.9	
9.4	25 34.2	56.1		8.3	38.2	51.2	K	9.2	53.3	1.0	B	9.5	53.9	50.7		7.8	5 11.1	9.2	K
9.5	42.0	13.8		7.5	55.7	46.5	K	9.0	10 20.1	10.6		9.0	44.3	38.1	K	8.3	7 43.8	15.2	L
9.0	50.7	59.8		8.0	46 8.9	22.3	K	9.5	21.0	52.7		8.8	42 10.4	48.8	K	9.5	8 47.0	47.4	
9.5	26 32.8	41.0		9.3	34.0	21.6	K	9.5	11 42.7	43.7		9.4	34.9	49.6		9.4	53.0	50.7	B
9.5	52.4	52.2		9.5	43.7	43.0		9.2	12 0.1	52.2	B	9.3	43.4	52.9		7.5	59.9	39.0	K
9.5	27 1.3	50.0		9.5	47 6.4	38.9		8.4	35.0	16.9		8.3	44 57.6	48.8	K	9.5	9 6.8	2.8	
9.3	13.2	16.3	K	9.5	20.2	58.7		9.5	13 22.9	46.1		9.4	45 20.3	30.1		9.5	46.4	0.1	
9.3	29.9	58.2		9.4	27.0	0.2		9.1	27.0	34.4	B	9.5	46 17.4	55.2		7.8	58.0	42.2	K

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	10ᵘ	+22°			10ᵘ—11ᵘ	+22°			11ᵘ	+22°			11ᵘ	+22°			12ᵘ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	10 23.9	37.8	K	9.2	35 6.5	39.2		9.4	1 56.7	5.2		9.1	29 8.1	15.7	S	9.5	0 35.4	10.0	
9.4	41.3	29.4	B	8.7	28.0	36.8	K	9.5	2 11.5	40.0		9.5	26.8	0.7		9.1	1 35.5	36.6	K
8.6	45.5	50.8	K	9.5	43.9	19.2	B	9.2	15.8	23.1	R	8.0	30 8.8	30.3	K	9.5	52.8	58.9	
8.7	11 8.5	47.4	K	8.7	52.2	14.8	B	8.8	25.9	25.2	K	7.0	19.0	32.6	K	9.5	2 31.3	38.2	
9.5	19.6	0 0		9.5	58.5	6.6		9.4	3 6.1	46.9		7.3	38.0	40.2	K	9.4	40.1	5.9	
9.4	35.2	1.2	B	9.3	36 9.0	34.7		7.0	9.7	7.0	K	9.2	31 4.7	10.7		9.5	4 16.0	7.2	
9.5	57.2	49.9	B	9.3	35.5	34.1		9.1	37.5	26.5	K	8.0	58.6	7.2	K	9.4	22.5	22.2	B
7.5	12 15.0	43.9	K	9.2	37 2.5	2.2	B	9.5	4 9.8	34.2		9.1	32 36.0	1.1		9.4	36.3	35.5	
9.4	13 40.5	29.9		9.5	56.5	28.5		8.7	29.6	50.8	K	8.6	40.3	11.3	K	9.5	44.2	18.9	B
9.0	44.1	8.1	K	9.4	39 11.9	56.2		9.5	30.6	26.1	B	9.5	33 2.3	41.0		8.4	5 32.8	1.9	K
9.3	44.5	14.1		9.1	30.0	15.1		9.4	5 10.3	43.4		5.5	16.2	9.3	K	7.5	56.2	51.3	K
9.0	50.8	4.6	K	8.5	38.0	40.2	K	9.5	6 12.8	47.6		9.4	44.8	45.2		9.0	6 23.5	31.0	
9.5	15 53.4	54.1		8.1	40 29.0	51.7	K	8.7	42.9	53.8		9.4	56.3	24.4		8.9	23.8	6.7	K
9.4	16 8.3	48.4	B	9.2	42.5	35.1	K	8.0	7 6.3	14.6	K	9.2	34 29.3	28.5	K	9.5	9 24.5	53.7	
9.3	52.5	37.5	K	9.0	49.9	54.4		9.5	16.8	22.5		9.5	35 16.4	54.8		9.3	10 17.9	56.0	
9.1	18 16.5	32.6		9.4	56.0	4.4		9.3	51.5	14.9	K	8.2	36 56.2	11.0	B	9.0	25.4	58.5	K
8.2	19 24.5	21.3	L	9.4	41 13.4	0.4		8.9	8 57.4	39.9		8.9	37 1.3	41.0	R	9.5	38.6	2.5	
9.5	36.8	5.3		8.7	39.0	28.1	K	9.5	9 17.7	6.5		9.3	5.6	56.1	B	9.4	43.4	58.8	B
9.5	51.0	0.5	B	9.5	42 44.0	15.5		9.4	20.1	45.4	B	9.5	10.8	52.6		8 8	11 21.4	19.5	
9.2	20 47.5	19.2	K	9.5	43 35.0	55.0		8.0	26.3	6.5	K	9.1	36.2	21.3		9.3	23.8	53.7	
9.3	51.5	22.3		9.5	44 0.5	35.7		9.5	45.8	58.8	B	9.5	38 35.0	6.9	B	9.2	12 1.8	48.4	K
9.4	21 22.0	17.6	B	9.5	2.6	1.6	B	8.8	10 17.5	14.8		9.5	39 49.8	21.3		8.6	14 10.1	18.8	K
9.1	29.5	33.2	K	9.5	45.2	36.7		6.9	21.1	58.6	K	9.4	57.9	43.5	B	8.0	20.5	6.8	K
9.5	45.0	27.4		9.0	45 3.6	37.5	B	8.3	40.9	5.0		9.5	40 18.8	56.5		7.4	26.4	39.9	K
9.2	55.7	49.1	K	9.2	5.7	54.8		9.4	11 10.2	44.6	B	9.3	41 23.5	58.1		9.5	15 28.4	37.5	
9.5	22 8.3	1.8		9.0	11.0	55.1	L	9.5	18.4	36.6		9.5	42 11.8	17.5		9.4	16 55.0	54.2	
8.5	23.0	17.9	L	9.5	40.5	28.2		7.7	12 26.0	42.0	K	8.7	13.9	54.0	K	8.5	17 13.1	58.3	K
9.5	34.6	54.6	B	9.5	47 5.9	49.2	B	9.5	13 6.0	2.7	B	9.4	29.3	54.1		9.5	30.9	26.4	
9.5	37.0	32.5	B	9.4	9.1	48.3	B	9.5	37.4	3.4		8.5	47.3	15.8		9.5	31.0	7.5	
8.7	23 11.1	56.7	K	7.5	49 23.5	35.2	K	9.0	51.5	46.6	K	9.5	43 50.7	10.0		8.8	18 7.2	4.8	
8.9	12.4	0.6	K	7.8	50 48.1	39.6	K	9.5	14 4.3	57.2		9.3	44 3.9	55.1		9.3	17 4	38.7	K
7.0	24 3.5	46.1	K	7.5	50.9	0.7	K	9.5	30.5	25.6		9.4	31.8	26.8		9.5	19 30.4	11.0	
9.5	11.5	57.7		7.4	55.5	16.7	K	9.4	57.4	5.4	B	9.4	57.8	33.7		9.3	20 0.0	4.1	
9.0	25 47.3	18.9	B	9.3	51 1.5	46.3		8.6	16 52.8	34.1		8.7	45 4.7	18.0		9.4	4.2	48.5	
9.3	26 15.4	30.1		8.4	2.5	26.3	L	9.4	18 20.2	22.8		9.5	17.8	32.0		9.5	21 26.1	32.3	
7.0	29.0	20.6	K	7.0	52 15.7	47.5	K	9.4	37.1	40.3		9.3	18.8	7.7	B	8.7	33.4	48.4	K
8.9	57.5	28.1		9.4	53 31.1	14.9		9.4	54.5	50.3		9.5	55.2	3.8	B	9.3	22 57.9	46.4	B
9.5	27 17.3	2.2	B	9.5	52.9	3.6		8.6	19 1.4	38.2	K	9.0	46 29.0	53.5		7.0	23 4.5	44.9	K
9.5	21.5	36.1		9.0	54 11.5	46.9	K	8.5	3.4	25.4	K	8.9	48 9.8	57.9	K	9.4	23.9	1.2	
7.5	24.1	8.1	K	8.8	28.6	46.1	K	9.3	11.3	0.9		9.5	10.6	6.8		9.5	38.8	9.9	
9.5	45.0	55.5		9.3	43.4	6.2		9.4	14.7	54.1		7.8	34.3	48.6	K	9.1	46.4	30.2	
9.3	28 32.5	11.3		9.2	51.5	44.1	K	7.5	26.2	39.7	K	9.5	49 32.1	50.6		8.0	24 18.2	22.7	B
8.5	50.5	21.0	K	9.3	55 27.8	29.3		9.5	20 46.5	51.7		8.9	50 18.3	30.3	K	8.6	26.1	55.8	K
9.5	29 0.0	40.6		9.5	31.5	35.6		9.0	21 50 1	13.4		9.2	29.0	58.4		9.5	25 9.8	53.0	
9.5	32.0	18.2		9.0	55.1	43.1		8.9	22 40.1	41.0	K	8.2	52.1	36.2	K	8.5	42.4	30.5	K
9.5	41.0	47.2	B	9.5	56 6.7	7.1		9.1	23 2.8	16.2		9.1	51 50.7	34.1	K	9.0	26 5.3	38.2	K
8.4	30 5.5	49.4	K	9.5	7.8	18.0		9.5	7.4	26.2		9.4	52 5.8	3.7	B	9.5	43.2	58.5	
9.5	19.4	33.0	R	9.4	45.8	57.6		9.5	12.9	33.7		9.5	53 29.0	52.7		9.5	27 13.2	50.1	
9.5	20.0	15.3		9.4	48.7	54.3		9.5	39.8	57.9		9.0	32.9	44.2	K	7.5	32.5	21.9	K
9.5	49.0	14.8		9.5	57 15.6	24.5		9.4	24 10.0	51.4	B	6.7	54 18.6	54.5	K	6.5	53.8	41.4	K
8.3	31 26.5	19.6	K	9.3	58 15.1	22.5	K	8.8	25.5	39.2	K	9.5	39.3	10.6	B	9.5	28 12.9	16.8	
7.9	27.1	56.7	K	9.4	15.2	56.0	B	9.5	47.8	39.2		9.2	45.2	24.5		9.5	29 4.7	2.0	
8.8	52.8	9.8	K	8.6	59 9.5	19.7	K	9.1	25 14.8	47.2		9.5	55 1.9	16.6	B	9.5	30 52.4	23.0	
9.5	32 19.3	2.8		9.5	11.6	56.1		8.5	46.7	23.4	K	8.7	4.3	33.8	B	9.5	54.5	54.3	B
8.6	25.5	34.4	K	9.5	24.5	1.8		8.2	26 35.9	49.7	K	9.3	8.4	46.3		9.5	55.2	58.3	
9.5	28.8	42.3	B	7.7	44.3	50.0	K	9.5	27 0.3	59.3		9.5	56 28.3	41.3		9.5	31 0.0	3.1	
9.3	33 8.4	51.9		8.3	0 3.1	50.4	K	9.4	28 25.3	31.0		6.0	50.7	15.2	K	9.5	42.8	12.6	B
8.2	59.5	56.0	K	9.2	16.8	8.6		9.5	41.4	42.1		8.7	58 16.1	22.7	K	9.5	53.5	3.8	
9.5	34 4.5	52.3		9.5	36.9	56.7		9.4	29 4.3	16.5	B	9.4	48.5	45.2	B	9.4	32 30.1	52.9	
9.2	11.0	37.8		9.3	1 55.8	44.6		9.0	5.6	24.3	B	9.5	59 41.3	7.2		8.0	33 4.0	19.2	B

2501—2560					2561—2620					2621—2680					2681—2740					2741—2800				
	12ᵘ—13ᵘ		+22°			13ᵘ		+22°			13ᵘ—14ᵘ		+22°			14ᵘ		+22°			14ᵘ—15ᵘ		+22°	
m					m					m					m					m				
9.0	33′	25.1	56.0	K	8.6	8′	0.2	0.1	K	8.2	36′	37.4	44.9	B	9.5	10′	54.8	54.7		9.5	37′	16.3	16.8	
9.5		26.7	50.6	B	9.5		7.9	33.8		9.0		38.7	25.7		9.4	11	35.3	13.2		9.4		38.8	47.8	
8.3	34	12.4	38.0	L	9.0		18.0	40.0	K	9.3		49.8	4.0		7.8		49.3	8.5	K	9.0	38	21.5	26.5	
9.5		44.1	5.3	B	7.5		57.4	9.4	K	8.0	37	8.7	33.0	K	9.5	12	11.7	2.0		9.1		37.3	33.4	
9.5	35	59.4	54.6		9.2	9	16.9	32.4	K	8.7		26.7	36.4	K	9.0		36.8	46.8	K	8.5	39	29.8	40.3	K
7.4	37	13.4	47.1	K	9.5		28.3	52.7	K	8.8	38	31.8	31.2	K	8.6	14	20.3	22.9		9.5		34.2	59.0	
9.5		54.8	5.6		9.3		31.3	55.4	K	9.3		55.0	48.8		8.0		21.8	36.1	K	9.5	40	7.1	9.0	
9.5	38	6.0	56.7		9.5		45.9	35.9		9.5		58.8	11.5		9.0		44.3	1.3	K	9.5		55.0	8.3	
9.1		35.9	50.5	K	9.5	11	29.2	49.5		9.3	39	14.7	57.6	B	9.5	15	0.3	54.8		9.2	41	4.3	49.5	K
9.0	39	9.7	0.5		9.0	12	38.4	59.0	K	9.5	40	15.8	7.4		9.5		32.8	26.8		8.2		25.9	18.9	B
9.3		14.4	22.6		9.5		56.9	36.8		9.4		45.6	2.5		9.4		55.1	32.6	B	9.5	42	58.3	14.0	
7.6	40	41.1	26.4	K	9.1	13	33.7	23.0	K	9.4		49.2	9.8		9.5	16	20.8	39.6		9.5	43	5.7	58.6	
8.8	41	34.4	48.7	K	9.5	14	21.4	7.2		9.2	41	44.3	29.9	K	8.2		42.4	55.5	K	9.5		7.3	28.2	
9.5		51.3	22.6		8.9	16	47.6	21.0	K	9.3		46.9	44.1		9.5	17	17.0	39.2		8.8		42.8	30.7	K
8.9	42	2.5	34.7	K	9.4	17	15.2	49.2		8.8	42	9.8	16.4		8.2		35.4	7.6	L	9.5	44	35.6	2.0	
9.3		30.9	2.8		9.4	18	7.2	49.0		9.2		54.0	32.7		8.5		39.3	21.6		8.7		38.5	54.8	K
8.3		40.4	26.7	R	9.5		9.3	2.8		9.1	43	4.8	32.7		7.1	18	8.6	1.4	K	9.5	46	22.3	5.5	
9.5	43	4.6	0.6		9.4	19	2.2	50.7		9.0		29.7	40.3		8.5		44.3	37.5	K	9.4		27.3	46.2	
5.2	46	10.0	2.7	S	9.0		26.2	30.4		8.4		41.5	15.8	B	8.7	19	7.2	56.7	B	9.2	47	16.9	30.3	
9.5		56.4	31.6		8.7	20	9.1	19.5		8.3	44	28.2	14.0	R	9.3		11.8	55.6		9.4		25.2	28.2	
8.5	47	28.0	22.6	K	8.8		36.2	2.0	K	9.2	45	1.8	59.4		8.6		32.3	33.6	K	9.0	49	28.6	48.0	B
7.0		31.7	54.0	K	9.5	21	5.0	4.2		9.3		35.3	53.8		9.5		33.0	56.4		9.5	50	27.1	56.6	
8.9	48	31.7	57.8	K	9.5	22	11.8	7.8		8.8	46	12.2	50.3		9.3		52.3	28.1		9.5		28.5	24.4	
9.5	49	28.9	55.2		7.4		12.3	55.9	K	9.3		27.8	30.1	B	9.5		58.3	34.0		6.2		32.7	8.3	K
9.3		38.0	16.7		9.4		35.0	39.1		9.5	47	52.2	34.4		8.2		59.2	14.4	L	9.5	51	8.3	38.2	
neb		40.7	29.5		9.5	23	11.3	33.0		9.2	48	24.3	45.0		8.5	21	14.9	2.3		9.4	53	0.2	32.3	
9.3	50	42.8	50.5		9.2		22.0	14.8	K	9.3	49	12.2	39.8		9.5		42.4	59.4		8.9		5.5	45.2	
9.3		52.7	41.3		9.3		22.3	54.4	K	9.0		36.2	54.2	K	9.5	22	8.2	3.0		9.5		14.3	57.4	
9.5		58.9	47.7		8.0	24	14.3	4.9	K	9.0	50	37.8	38.6		9.5	23	4.8	37.1		8.9		37.9	3.5	K
9.2	51	10.8	6.1		9.5		47.7	20.8	B	5.5	51	52.1	24.7	K	9.5		16.1	55.3		9.1		47.6	2.8	K
6.8		36.3	49.9	K	9.5	26	4.1	15.3		6.8	54	18.1	41.2	K	9.5		29.6	27.9	B	9.0		55.9	37.8	K
7.3	53	9.9	21.2	K	9.5		24.6	18.5		8.4		23.4	5.6		9.5	24	23.8	19.6		6.3	54	22.8	38.0	K
8.9		36.5	34.3		9.5		25.4	55.7		9.5		33.9	34.2		9.2	25	24.1	6.9		8.9	55	1.8	21.4	
9.3	54	9.4	11.5		9.5		31.9	36.5		7.5	55	11.9	15.9	K	8.5		26.3	43.1	K	9.5		24.8	15.6	
9.5		15.0	29.8		9.1		50.1	42.9	K	9.5	56	9.7	13.5		5.3		56.8	54.1	K	8.6		26.1	36.3	K
9.3		28.1	32.6	B	9.2		58.3	3.0		8.0		12.4	45.7	K	9.0	26	29.3	32.1	K	9.5	56	19.8	52.8	
7.0		30.3	3.4	K	8.8	27	1.4	9.2	K	9.5		41.4	31.2		9.5		57.6	21.7		9.5		23.2	17.9	
9.2		32.5	13.2	B	9.4		22.2	1.0		9.3	57	2.8	58.6		8.8	27	37.6	2.8		9.5		45.9	22.7	
9.5	55	46.3	35.9	B	9.1		31.7	24.7		8.0		42.7	4.9	K	9.4	28	45.8	19.5		9.3	57	2.4	22.7	
7.4	57	1.0	40.3	K	9.4		32.9	8.2		9.5	58	3.8	3.8		9.4		49.6	6.4		8.2	58	19.5	59.0	K
8.3		59.0	16.3	B	9.5	28	26.2	49.2		6.5	59	29.9	51.9	K	9.3	30	4.8	29.2	K	9.2		31.3	39.9	B
9.3	58	27.9	23.6		9.3		39.9	35.9		9.2		31.9	41.2	K	9.5		11.8	45.5		8.8		47.9	23.7	K
9.5	59	23.0	39.0		9.4		48.2	49.0		9.4		33.5	57.7		9.5		36.7	2.0		9.2	59	28.2	51.1	
9.4	1	50.8	29.1		9.0	29	4.4	8.2	K	9.5		39.4	17.0		9.1	31	5.2	6.2	K	9.3	0	31.9	58.7	B
8.1	2	5.2	13.9	B	9.4		11.3	5.0		9.3		57.3	9.0	B	9.5	32	32.9	5.5		8.2		39.2	34.7	B
9.4		29.5	16.4		8.7		29.5	16.9	K	9.5	1	16.9	45.6		9.3		39.1	31.3	B	9.4		41.2	56.7	
9.4		53.7	24.1		8.5		33.0	40.4	K	9.1		21.2	55.9		8.0	33	11.7	48.2	K	9.5		58.9	14.4	
9.4	3	13.3	7.1		9.5		35.9	44.0		9.3	2	2.0	6.8		9.4		17.3	30.7		8.7	1	12.3	3.7	K
9.3		45.3	55.5		9.4		36.9	45.2	B	9.4	3	5.5	54.3		9.4		22.0	34.0		9.5		27.8	58.0	
7.0		49.2	0.5	K	9.4	30	13.8	29.6		9.3		27.4	37.0		9.2		44.5	53.4		9.5		37.5	56.8	
9.3	4	28.4	57.1		9.4		56.7	47.5		8.2	4	27.9	25.6	K	6.0		48.8	36.4	K	9.1	2	18.4	42.7	
7.1		31.2	41.5	K	9.0	32	0.8	10.9		9.1		47.9	29.5	K	9.3		50.7	53.5		8.8		34.4	24.3	
9.1		34.6	20.0	K	9.0		9.5	21.6	K	9.5		52.4	48.1		9.4	34	14.7	40.5	B	9.3		48.4	40.3	
9.4		50.2	50.1		9.5	33	14.3	7.4		9.1	6	55.1	53.8		9.4		19.2	52.3	B	9.5	3	0.5	8.5	
9.5	5	2.1	44.2		8.5		24.7	21.6	K	9.5	7	4.3	27.1	B	9.5		19.3	59.1		8.4		37.9	25.8	K
9.4		31.2	49.2		8.0		29.3	58.1	L	9.4		48.4	18.5		8.9		25.1	39.7	K	9.4	4	9.0	26.2	
9.4	6	12.9	32.9		9.2	34	12.6	8.7		8.2		58.0	5.2	K	9.5	36	8.3	59.8		8.8		35.9	47.2	K
9.4		31.8	30.7		9.3		13.9	2.5		6.5		58.1	34.2	K	8.1		25.3	24.4	L	9.4		48.4	27.2	
9.1	7	14.8	4.0	K	9.5	35	25.5	6.7		9.5	8	17.9	36.7		8.7		57.2	24.8	K	7.5	5	8.9	4.8	K
9.4		15.3	51.7		8.7		30.8	18.4	K	9.5		50.5	14.6		9.3	37	0.9	46.9		9.2		32.0	25.8	

2801—2860					2861—2920					2921—2980					2981—3040					3041—3100				
	15ᵘ		+22°			15ᵘ		+22°			15ᵘ—16ᵘ		+22°			16ᵘ		+22°			16ᵘ—17ᵘ		+22°	
m					m					m					m					m				
6.8	5	38.2	53.2	K	9.1	30	13.5	35.9		7.0	59	21.5	18.7	K	9.0	24	10.7	48.5		9.0	53	49.1	6.2	
9.2		49.2	38.4	B	9.3	31	15.3	20.3	B	9.5		49.5	44.6		9.5		37.6	6.9		9.0	54	0.6	47.0	
9.5	6	57.6	7.2		8.2		28.9	56.9	L	9.5	0	29.2	45.0		6.5	25	2.3	30.8	K	9.0		4.7	36.3	
9.3	8	15.7	50.6		9.2		47.0	16.7	B	8.7		34.5	5.3	K	9.5		46.1	35.2		9.3		40.2	23.8	
9.5		26.7	9.5		9.5	32	20.7	13.2	B	8.8		50.3	1.0	K	9.0		51.7	53.8	K	5.8		51.0	51.0	K
9.5		44.2	28.2		9.3		24.1	20.1	B	6.5	1	5.5	13.1	K	9.4		54.9	51.5	B	9.5		57.5	10.2	R
9.5		50.0	19.6		9.0		46.1	7.1		9.4		22.0	44.2		9.5	26	56.6	16.6		9.0	55	20.3	57.1	B
9.3	9	30.7	53.9		9.5		50.0	25.8		8.5	2	23.0	35.5	K	9.5	27	18.8	4.6		9.3		20.3	40.8	
9.2	10	7.1	9.5		9.5	33	42.5	22.9	B	9.4		30.1	51.3		9.5		18.8	50.9		9.4		40.1	4.5	
9.3		53.5	2.3		9.3	34	13.2	25.9		9.4		30.7	58.4	B	8.2	28	37.9	3.2	K	9.0		43.5	35.4	K
7.0	11	3.9	49.6	K	9.2		17.7	33.1	B	9.4		54.4	6.5	B	8.8	29	36.3	25.9	K	9.0	56	23.6	3.1	
9.3		30.4	58.1		9.5	35	1.9	31.7		8.0	3	5.5	13.0	B	9.5		57.4	47.1		9.5		29.7	58.0	
9.3		32.6	42.3		7.8		8.9	47.5	K	9.4		9.7	54.0		9.4	30	12.9	27.6	B	9.5		33.7	33.8	
9.1		50.3	58.6	K	9.4		57.6	42.5	B	9.3		46.0	42.5		9.3		15.0	5.5	K	9.0		58.8	39.7	
8.7	12	33.4	26.8	K	9.2	36	25.0	55.4		9.4	5	1.9	54.5		9.5		31.0	16.6		9.1		59.1	8.4	K
9.5		45.2	6.0		9.5		46.2	55.1		9.5		34.0	6.7		9.1	31	20.8	16.9		9.3	57	3.7	26.4	
9.4	13	12.3	38.9		7.8		51.4	9.9	K	9.5		59.2	14.8		8.7		23.9	51.8	K	9.4		6.4	56.9	
9.4		39.9	56.5		7.7	37	38.8	47.9	K	8.4	6	33.6	37.7	K	8.0		27.9	43.5	K	9.3		18.7	20.7	
9.0	14	6.2	37.2		9.5	38	3.3	4.6		9.5		46.6	26.4		7.7	33	6.8	30.7	L	9.3		31.7	33.1	
8.7		19.4	0.7	K	8.9	39	2.3	2.3		9.2	7	5.3	23.0	B	7.2		10.9	16.9	L	9.4		36.7	12.4	
8.8		49.2	26.2	B	9.3	41	15.4	56.6		9.5		33.9	27.9		9.3		29.6	49.1		9.1		44.5	10.6	
8.4	15	11.9	24.7	K	8.9		53.4	7.7	K	9.1		36.8	35.6	K	7.8	34	46.0	12.9	L	9.0		59.7	27.3	
9.5		14.1	45.9	B	6.5	42	9.8	51.6	K	9.5	8	11.7	10.3		9.1	35	5.3	31.2		9.0	58	5.0	40.1	
8.3		29.0	0.4	K	9.5		35.5	1.2	B	9.2		16.6	52.8		7.5		8.0	44.3	L	9.5		11.2	56.9	
9.1		33.9	36.8		9.4	43	0.4	10.1		9.5		33.8	12.0		9.5		24.6	4.4		9.5		22.0	9.3	
9.0		34.2	24.2	K	9.5		13.7	3.0		8.5		38.0	43.6	K	9.2		27.0	14.8	B	9.4		23.6	48.8	
9.3	16	0.9	13.6		9.3		23.2	6.6		9.5	9	32.2	24.1		8.8		53.8	8.4	L	9.4		26.6	15.9	B
9.3		25.9	22.0		8.5	44	21.0	55.3	S	9.1		35.3	20.8	B	9.5	36	42.0	48.7		8.8		45.7	35.8	K
9.2		27.0	3.1		8.0		46.4	45.2	K	9.4	10	3.3	40.6	B	9.5	37	22.0	49.8		9.3	59	10.5	33.9	B
9.5		29.4	56.2		9.3	45	22.3	49.1		9.3		11.4	21.3		8.0		51.3	39.0	K	9.5		35.3	23.4	
9.3	17	14.5	28.3		8.0		58.9	9.5	K	9.0	11	2.8	33.6	K	9.5	38	13.0	42.1		9.5		55.7	5.7	
9.5		23.0	16.4		9.5	47	8.5	2.3		9.5		6.5	53.2		9.5		20.7	51.2		9.5		57.6	27.0	
8.7		35.9	48.9	K	9.5		23.8	8.6		9.5		22.9	53.6		9.3	39	56.2	8.5		6.0	0	10.2	17.4	K
8.8	19	9.9	34.4	K	9.4		26.9	50.0		9.5	12	43.8	49.1		9.4	40	36.4	0.1	B	9.3		19.0	19.5	
9.5		18.4	31.3		9.5	48	1.0	48.3		8.8		56.7	8.7	K	9.5		42.2	36.6		9.5		31.1	36.8	
9.4	20	7.4	26.5		9.1		5.3	50.0	B	9.5	13	51.3	35.3		9.5	41	11.2	56.0		9.2		38.2	12.8	K
9.5		20.9	7.9	B	9.3		27.2	50.0	B	9.5	14	0.3	5.3		9.5		17.0	26.6		8.5		52.6	15.9	K
9.4		56.5	13.0		7.3		36.8	35.1	K	7.0		57.3	36.6	K	9.5		20.0	20.4		9.4		56.3	54.7	
9.5	21	31.9	38.9		8.9		54.4	55.6	K	7.5	15	37.3	9.3	K	9.1		51.3	26.6		9.5	1	0.6	56.0	
8.2		51.2	59.3	B	8.9	49	27.5	9.6		9.5		41.5	43.3		9.0		56.4	15.6		9.2		22.7	14.8	K
8.0	22	24.5	56.9	K	9.5	50	9.7	59.6		8.2		45.4	53.3	K	9.4	42	1.9	2.0		9.3		41.6	46.3	
9.1		28.9	25.8		9.2		21.4	45.1		9.1		49.3	38.0	K	9.1	43	4.0	36.8		9.0		43.7	6.6	K
9.3		35.0	59.0		8.8	51	22.4	50.4	K	8.3	16	22.9	6.2	L	9.4		20.0	59.3		9.5	2	2.1	50.5	
9.0		49.7	44.0	K	8.7		24.0	12.3	B	9.0		31.3	41.2	K	9.4		21.8	50.5		9.0		25.3	4.5	K
9.5		56.4	18.5		8.5	52	37.0	13.3	K	9.5		47.6	22.8		9.1	44	11.6	50.2	K	8.5	3	12.6	40.0	K
9.3	23	18.4	14.8		8.5		39.0	13.3	K	9.0	17	25.2	23.1	K	9.5		25.1	12.4		7.3		19.5	16.8	K
9.1		26.4	42.0		8.2	53	2.1	53.5	K	9.1		52.6	53.0		9.5	45	35.4	7.1		9.5		20.1	48.3	
9.5	24	5.6	54.1		7.5		39.7	3.0	K	8.9		56.7	42.1		9.4		58.9	34.9	B	9.3		34.7	2.1	
9.4		10.6	49.3	B	9.0	54	12.4	16.5	K	7.7	18	32.3	43.9	K	8.8	46	29.0	25.2		9.4		37.5	9.4	
9.4	25	2.4	45.5		9.3		47.5	0.9		9.5	19	16.9	59.7		9.2		42.1	6.0		9.4		40.3	57.4	
9.2		23.9	5.3		9.4	55	17.6	47.3		9.5		57.5	6.2		8.8	47	1.9	26.6		9.5		48.3	20.4	B
9.5		58.0	6.8		9.5	56	1.5	26.6		9.1	20	12.1	9.1	B	8.3		9.1	54.2	K	8.2	4	2.2	35.9	K
9.5	26	7.8	16.0		9.3		10.9	17.2		9.5		18.2	57.2		8.3		9.4	58.5	K	9.4		49.4	57.6	
9.4	28	27.3	10.0		6.8		30.0	37.9	L	9.4	21	1.9	9.4		9.0		56.3	37.0		9.5	5	9.2	1.9	
9.3		31.9	5.4	B	8.3		46.0	16.6	K	9.4	22	13.5	20.7		7.8	50	11.2	20.7	K	9.5		23.2	6.7	
9.5		51.7	43.7		8.5	57	4.5	21.4	K	9.2		15.9	28.3	B	8.7	51	5.3	59.7	K	8.9		26.9	54.8	K
8.0	29	0.8	58.8	K	8.0		19.9	58.4	K	9.5		16.1	54.9		8.5		31.4	1.4		9.4		58.5	51.4	
9.5		10.7	44.2		9.5	58	22.0	33.2		9 3		29.0	17.7		9.5	52	45.4	0.9		9.5	6	6.8	52 5	
8.8		18.3	4.9	K	9.0		23.5	13.6		9.1		45.5	46.7	B	9.4	53	26.5	38.6	B	9.5		15.2	12.4	
9.5		46.4	47.9		8.2		59.0	34.9	K	9.5	23	13.8	43.9		9.5		31.0	39.9		9.0		18.1	30.6	B

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ʰ	+22°			17ʰ	+22°			17ʰ—18ʰ	+22°			18ʰ	+22°			18ʰ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	6 40.4	8.4	B	9.4	24 51.0	38.1		9.5	43 41.8	11.7	B	9.2	1 18.1	50.3	K	9.5	16 21.5	40.6	
9.5	50.7	57.6		8.3	25 41.5	52.2	K	8.3	50.5	14.9	K	8.0	49.9	23.2	K	8.5	22.5	52.2	
7.3	7 23.0	55.5	L	9.1	26 0.8	3.8		9.5	53.5	7.7		9.0	53.5	17.0	K	9.4	40.8	17.2	
8.7	31.5	10.4		9.5	27 2.5	26.3		8.8	55.3	50.5	K	9.5	54.2	48.7	B	9.5	43.7	38.2	
8.8	57.0	44.5	B	8.5	23.9	18.9	K	9.4	44 25.3	59.7	B	9.5	2 50.1	7.3		9.5	47.7	4.3	
9.5	8 48.5	29.6		9.3	19 1.5	8.0	K	8.0	35.9	12.6	K	9.0	3 4.9	55.4	K	9.5	17 24.0	50.2	
9.3	9 14.5	34.2		9.5	1.8	13.3		6.5	42.1	21.3	K	9.5	7.5	34.5		9.5	31.4	14.9	
9.5	57.7	7.1		9.0	30 23.5	32.5		9.1	43.4	46.4		9.2	17.0	26.1	B	9.5	41.0	51.2	
8.6	10 13.4	57.3	K	9.5	23.8	4.2		9.5	45.1	25.8		9.4	24.7	25.4		9.5	44.8	19.1	
8.8	46.5	7 3	K	9.4	36.5	58.0		8.6	45 34.5	48.0	K	8.4	32.7	57.9	K	9.5	53.6	30.0	
9.1	55.8	29.4		9.3	31 7.5	10.2		9.5	46.8	22.0		9.2	35.8	0.2	K	9.3	18 19.5	40.6	
9.5	11 3.2	26.0		8.3	20.5	27.0	K	9.1	47 22.4	11.4		9.2	45.7	21.5		9.2	25.4	58.6	
9.5	6.0	7.6		9.3	32 7.3	5.7		8.8	31.2	58.7	K	9.3	4 20.5	40.8		8.8	38.4	3.1	K
9.5	6.6	36.7		8.8	26.8	41.4	K	9.5	50.8	10.0		9.5	31.1	31.1		9.5	38.7	8.0	
9.5	38.8	23.8		9.5	27.6	24.0	B	9.5	58.7	59.7		8.3	40.2	52.4		9.2	40.9	15.2	
9.3	42.5	53.8		8.5	42.2	31.4	K	9.1	49 32.5	51.6		9.5	5 11.6	8.6		9.3	43.0	49.8	
9.4	58.5	0.2		8.1	45.5	21.6	B	5.0	44.8	28.6	K	9.5	21.1	17.3		8.7	19 20.0	51.0	K
9.5	12 50.4	38.7		9.5	53.6	57.3		9.5	52.5	20.3		9.4	22.9	39.5	B	7.5	22.9	37.7	L
9.5	13 21.6	51.1		9.2	33 29.8	19.0	K	9.5	50 3.1	56.3		9.2	27.1	14.6		9.5	26.7	15.7	
8.0	27.8	6.2	K	9.2	39.6	58.7	K	8.5	51 8.8	46.7	B	8.7	38.8	34.3	L	9.5	26.8	2.3	
9.4	30.9	35.2	B	9.5	44.2	51.1		9.1	22.1	35.0		9.5	41.7	46.3		9.5	28.8	25.8	
9.5	45.3	54.1		9.0	45.0	32.3	K	9.5	31.2	37.5		9.4	6 36 5	40.8		9.4	39.4	25.3	
9.1	49.9	59.4	K	9.5	34 0.0	31.7		9.5	48.8	41.6		7.5	47.2	47.7	K	9.5	20 22.0	31.4	
9.5	14 16.3	15.1		9.5	25.8	57.4		8.8	52 9.7	45.8		9.0	50.2	31.2	K	9.3	27.6	57.7	
9.5	29.8	13.4		9.5	48.4	7.7		9.0	31.3	9.0	K	9.0	52.2	29.8	K	9.5	33.8	31.6	
9.1	54.5	57.0		8.3	52.5	18.5	K	9.3	59.1	3.3	B	9.2	54.3	3.3	B	9.5	21 8.1	58.1	
9.3	15 58.8	6.8		9.3	53.5	0.2	K	9.1	53 5.5	11.4		9.5	7 15.2	59.2		9.3	9.1	55.1	
9.3	16 20.7	55.3	B	9.4	56.8	14.2		9.5	9.4	49.5		9.5	19.3	23.6		8.7	20.9	35.7	
9.3	36.8	30.4		9.0	35 10.6	26.8	K	9.3	13.6	46.6	B	9.3	19.5	34.2		9.3	22.3	9.2	
8.8	48.2	17.5	K	8.6	28.5	30.0	K	8.4	31.8	5.1	K	9.3	20.4	2.3		9.5	39.0	0.2	
9.0	17 3.6	12.7	B	9.2	36 9.3	46.9	K	9.5	33.9	10.3		9.5	25.6	45.7	B	9.2	39.8	18.4	
9.4	20.0	17.7		9.5	12.3	26.0		9.0	40.4	48.5		9.1	8 13.8	33.2		9.5	42.9	33.3	
8.1	40.7	3.3	K	9.4	15.2	29.8	B	9.3	40.2	29.5		9.3	15.2	56.0		9.0	51.3	33.1	B
9.3	18 11.6	32.9	B	9.0	15.2	42.7	K	9.0	54 6.8	18.5		9.3	15.7	47.0		9.5	54.8	2.9	
8.6	19 8.5	17.3		9.5	30.7	50.6		9.2	9.5	22.4		9.4	34.8	44.9		9.2	22 3.7	8.8	
8.2	13.8	33.9	K	9.5	38.2	23.7		7.5	55 21.4	46.4	L	8.6	43.7	17.5	R	9.4	6.0	54.2	
9.5	35.3	0.5		8.9	37 12.7	51.9	K	8.8	40.1	17.5		9.3	9 11.8	44.3		9.2	10.9	34.0	
8.5	44.9	38.7	K	9.4	15.5	19.4		8.0	53.8	14.0	B	9.1	12.8	16.0		9.3	21.0	49.2	
9.0	20 13.9	14.4	K	8.1	32.4	41.2	K	7.2	54.6	27.5	B	8.0	31.5	0.3	K	9.3	28.1	13.6	B
9.5	24.5	28.0		9.3	40.6	22.1	B	6.7	56 25.8	55.8	L	9.5	39 9	15.3		9.4	32.9	40.3	
8.7	25.8	33.5	L	9.5	38 23.8	40.2		9.5	54.2	3.5		8.0	44.5	38.0	K	9.3	45.4	25.8	
9.5	39.2	6.6		9.1	41.1	44.0		9.5	57 19.8	49.3		9.4	47.0	51.3	B	9.4	55.1	55.4	
9.5	50.1	37.6		9.5	39 13.4	50.2		9.4	25.6	32.3		9.5	10 9.3	8.1		8.7	55.2	59.9	K
9.2	52.1	48.6	R	9.5	16.4	45.1		9.3	26.3	27.8		9.5	11.8	57.8		9.5	23 4.8	44.3	
9.0	54.1	43.6	B	8.2	21.1	23.4	L	9.5	47.1	6.2		8.8	23.1	46.2	K	8.8	49.9	40.3	
9.5	21 33.9	4.6		9.3	42.3	12.8	B	9.3	55.8	40.5	B	9.0	23.4	47.0	K	9.5	24 38.4	28.1	
8.8	46.1	54.9	L	8.2	53.2	15.5	L	7.3	58 58.1	54.5	B	9.2	40.6	45.8	B	9.1	41.1	59.1	
9.1	22 20.8	17.0		8.4	55.1	30.2	B	9.5	59 5.4	24.0		9.0	11 26.1	38.0		9.5	47.0	51.2	
8.9	45.4	1.7		9.1	40 10.4	15.7		9.5	7.4	29.6		9.3	27.9	0.3		9.4	51.4	15.5	
8.0	23 6.3	14.9	K	9.2	41 8.1	6.5		9.2	12.0	4.1		9.5	35.5	25.0		8.9	54.2	42.0	B
9.5	12.8	40.5		9.0	13.8	41.9		9.3	30.2	28.3	B	9.5	37.8	6.5		9.5	57.9	3.7	
9.5	14.4	1.2		8.7	19.4	49.5	K	8.9	47.8	3.8		9.5	52.9	20.8		9.1	25 3.0	48.0	
9.5	20.5	49.3		9.5	35.9	57.8		5.2	54.8	12.3	R	9.2	12 58.3	55.1	B	9.2	17.1	56.9	
9.5	22.3	0.2		9.5	51.0	38.7	B	9.2	56.9	4.7		8.7	13 33.4	54.2	K	8.2	23.0	52.9	L
9.0	32.7	5.4	L	9.4	54.5	43.5	B	9.3	0 0.0	43.7		9.3	34.3	9.2		9.4	26.8	20.8	
8.6	37.5	25.2	K	9.5	42 23.1	21.9		9.2	25.0	41.0		9.3	59.8	23.2		9.4	29.7	42.8	
7.7	24 10.7	8.9	L	9.5	43 5.8	41.3		9.5	30.6	48.6		7.2	14 34.0	43.6	K	9.1	47.8	26.5	
7.6	22.8	59.6	K	9.4	23.9	22.6	B	9.2	32.3	54.4		9.1	35.0	58.7	K	8.7	50.6	18.6	B
8.9	33.3	31.1	K	9.1	32.3	28.4		9.5	37.0	13.2		9.4	36.4	24.3	B	9.3	54.8	23.3	
9.4	42.3	58.1	B	9.3	36.5	25.1	B	8.3	55.9	24.6	K	9.5	15 40.9	37.6		9.5	59.5	11.0	

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵘ	+22°			18ᵘ	+22°			18ᵘ	+22°			18ᵘ—19ᵘ	+22°			19ᵘ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	26 6.3	16.3	B	8.2	37 16.0	42.5	K	9.5	47 59.9	7.5	B	8.8	59 16.7	33.6		9.2	10 37.0	22.2	
8.7	11.3	35.4	K	8.5	18.3	27.4	K	9.5	48 6.0	2.0		9.5	34.0	43.0		9.5	37.9	13.6	
9.5	12.1	53.2		7.9	19.7	57.5	K	9.1	28.3	38.9	K	9.5	34.4	28.2		9.5	59.0	20.2	
9.5	15.5	15.3		9.0	23.8	1.3		5.0	37.8	27.8	K	9.5	41.6	53.0		8.0	11 1.4	10.1	L
9.3	27.4	37.8	K	9.5	24.1	36.3	B	8.6	41.1	58.7		9.5	59.2	40.3		9.5	8.3	47.9	
9.1	27 12.7	13.3	K	9.5	27.0	29.5		8.8	49 13.0	43.9	K	8.5	0 16.9	30.4	K	9.5	29.4	55.3	
9.5	17.0	54.1		9.5	34.2	57.8		9.5	31.0	58.7		9.5	16.9	45.4	B	7.5	29.9	10.8	K
9.2	25.6	2.8		9.5	41.5	57.2		9.2	32.7	9.2		9.4	18.4	47.4		6.1	35.3	45.8	K
9.5	29.0	45.5		9.5	38 4.3	22.2	B	8.6	41.2	29.9	B	9.4	25.2	2.2		9.2	12 1.6	15.5	B
9.5	35.8	0.2		9.1	10.9	15.3	K	9.5	54.4	23.5		7.8	26.9	39.9	K	9.5	4.9	17.0	
9.5	28 14.9	38.1		9.3	20.7	53.1	B	9.3	58.1	53.6	K	9 2	28.0	52.5	R	9.5	12.2	5.1	
9.5	23.0	44.5		7.5	49.8	24.5	K	7.9	50 12.0	52.9	K	8.2	42.7	10.3	K	9.4	24.9	9.7	
9.5	30.8	0.6		9.4	39 19.9	37.2	B	9.3	16.8	24.5		9.1	50.0	52.8	R	9.2	26.5	14.5	B
9.5	34.7	9.7		9.5	20.9	38.8		8.8	21.7	18.4		7.0	59.8	21.3	K	9.5	33.5	6.3	
9.3	54.8	27.7		9.5	41.7	53.3		7.7	55.9	37.1	K	9.5	1 38.0	50.3		9.3	35.1	28.6	
8.5	29 4.7	11.4		9.1	45.7	9.5	K	9.4	51 26.7	15.9		9.3	2 11.7	0.2		9.5	39.4	8.7	
9.5	47.6	38.5	B	9.0	50.1	50.5	K	9.2	35.7	12.2		9.5	18.8	17.4		9.5	56.3	4.5	
7.5	50.2	38 3	B	9.4	55.5	50.3		9.5	47.5	15.9		9.5	37.2	4.5		8.9	13 11.7	25.9	
9.1	30 19.0	52.9		9.5	40 6.7	13.0		9.3	52.8	18.9		9.4	41.8	21.8		9.3	20.3	45.9	
9.1	18.7	9.7		9.5	11.3	7.7		9.0	52 29.2	10.9		9.5	42.4	40.3		7.7	22.0	18.2	K
9.0	44.9	31.7	K	9.5	22.8	1.3		9.4	33.0	40.3		9.5	53.3	12.6	B	9.1	14 0.0	20.5	K
9.3	45.8	27.5		9.5	35.0	53.8		9.2	33.2	26.0		9.4	3 5.4	37.5		8.9	4.2	32.0	
9.4	47.1	59.1		9.5	44.7	6.8		8.5	47.9	16.4	B	9.5	13.1	36.2		9.2	16.5	1.4	
9.5	53.2	4.9		9.5	49.7	14.2		9 5	51.0	51.0		8.8	13.2	45.2	K	9.5	27.5	8.9	
9.3	31 14.7	16.1		9.5	41 11.0	36.4		8.6	55.9	18.3		9.5	15.5	38.7	B	9.1	33.3	40.6	B
9.5	25.9	38.8		9.1	14.9	32.0		9.0	59.2	14.8		9.5	16.4	39.5		9.5	40.5	22.7	
9.5	30.1	55.1		8.5	15.6	55.7	K	9.2	53 7.4	42.8		9.5	17.0	55.6		9.3	44.5	47.6	
9.5	38.0	52.6		9.5	42 19.9	36.2		9.5	22.6	4.0		9.5	22.1	36.7		9.2	46.2	48.0	
9.0	39.7	9.6		9.5	27.4	58.7		6.5	50.9	36.9	K	9.5	35.6	48.2		9.0	51.6	47.8	
9.5	48.2	1.6		9.1	30.3	57.7		9.5	54 9.0	53.7		9.5	52.0	48.6		9.3	15 9.0	22.1	
9.5	48.9	17.5	B	9.1	47.7	1.8	K	9.2	10.2	5.3		9.5	58.8	28.1		9.3	10.0	15.4	
8.5	51.2	15.2	K	9.2	49.7	14.4		9.2	23.2	4.3		9.5	4 2.5	1.2		9.5	24.1	29.5	
9.5	32 1.9	35.6		9.3	43 22.6	6.4		9.5	35.8	25.7		8.2	23.8	29.1	K	9.5	34.0	16.7	
8.4	10.8	24.8	K	8.2	29.0	47.5	K	9.5	40.3	34.6		9.5	31.9	56.0		7.7	46.9	13.7	R
9.0	26.1	59.4		9.5	30.5	41.4	B	8.9	55 0.0	53.4	K	9.0	5 7.6	40.4	L	8.2	16 2.9	15.5	L
9.2	34.6	35.2		9.5	37.5	41.4		9.4	18.2	0.4		9.5	8.5	12.7		9.1	8.2	0.2	
8.9	47.7	14.9	K	8.9	47.9	32.9	K	9.5	31.1	59.9		7,5	19.3	8.6	L	9.0	10.3	40.9	K
9.5	33 52.2	15.4		9.4	55.0	45.0		9.3	35.7	1.8	B	9.5	30.9	24.1		9.2	17.3	43.1	
9.5	57.1	50.4		9.4	44 14.3	7.0		9.5	36.7	22.6		9.0	49.6	9.5	B	9.4	26.4	49.3	
9.3	34 9.0	51.0		9.5	16.8	18.3		8.5	37.9	40.9	K	9.5	6 1.0	15.8	B	9.1	57.5	57.0	
9.4	17.5	46.2		9.5	25.3	45.0		6.5	40.4	3.5	L	9.5	1.3	47.1		9.0	17 3.5	5.2	
9.5	29.7	51.8		9.2	35.9	46.8		9.1	53.9	38.2	K	9.4	33.0	7.3		9.5	18.0	17.5	
9.5	35.0	41.8		9.4	39.0	2.3		8.6	54.5	52.8	K	9.5	53.6	24.8	B	8.3	33.1	17.0	R
9.5	56.0	50.0		9.4	39.7	11.7		9.0	56 0.0	36.0	K	9.5	7 0.2	26.3		8.5	18 11.3	40.9	
9.5	35 5.9	31.0		8.7	50.3	55.0	B	9.5	0.1	1.3		9.3	0.9	11.3		9.5	18.3	45.4	
9.2	6.4	38.2		9.0	58.5	42.6		9.4	3.1	37.1	B	8.9	1.2	37.5	R	8.7	34.1	27.1	
9.3	26.9	33.8		9.5	45 8.5	58.5		9.5	30.5	16.0		9.5	11.7	32.1		8.6	36.1	29.6	
9.0	32.8	26.5		9.5	14.3	48.0		9.5	33.4	33.9		8.4	31.5	57.8		9.5	54.7	39.4	
9.1	44.0	52.4	K	9.2	15.7	35.9		9.5	51.6	16.5	B	9.4	44.2	37.5		9.5	19 10.1	27.6	
9.5	51.8	24.7		9.2	55.0	43.1		9.5	57 4.5	21.4		9.3	55.3	40.7		9.4	12.5	4.2	
9.2	52.6	59.9	K	8.7	46 1.3	52.4	K	9.5	6.6	50.6		9.4	55.9	8.6		9.4	12.9	11.0	
9.5	36 23.1	12.2		9.5	23.8	17.8		9.5	37.5	44.4		8.5	8 6.4	53.3	K	9.2	29.1	7.5	
9.3	31.8	1.0		9.5	37.4	18.5		9.1	46.8	6.1		9.0	25.2	0.0		8.3	20 1.1	28.1	
9.2	32.7	13.0	K	9.3	43.8	30.1		9.5	47.0	40.4	B	8.5	40.0	3.0		9.2	7.4	14.0	
9.3	39.9	36.5		9.3	52.5	29.6		8.1	58 18.5	27.4	B	9.2	41.6	28.3		8.9	8.5	59.4	
9.1	47.1	59.2	K	9.4	59.7	54.3		9.2	32.8	37.2		9.5	50.6	25,6		8.9	11.5	3.9	K
7.7	55.0	41.9	K	9.4	47 1.1	58.5		9.2	40.2	22.6	B	9.5	9 26.2	9.1	B	9.3	24.1	28.0	
8.9	55.8	2.9		9.3	7.0	45.9		9.5	57.9	56.6		8.3	33.3	41.2		9.5	27.0	39.5	
9.1	37 2.0	59.1	R	9.5	32.1	59.9		8.7	58.5	50.9	K	9.3	10 12.6	0.4	B	9.4	31.1	25.6	
9.2	4.9	11.9		8.9	47.0	47.5	K	9.4	59 9	40.7	B	9.1	15.2	36.5		9.5	31.4	50.8	

3701—3760					3761—3820					3821—3880					3881—3940					3941—4000				
	19ᵘ		+22°			19ᵘ		+22°			19ᵘ		+22°			19ᵘ—20ᵘ	+22°			20ᵘ		+22°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	20	52.1	27.8		9.0	34	7.1	30.5		9.3	42	59.1	45.4	B	9.0	53	49.9	19.1	R	8.1	2	42.5	59.7	B
9.3	21	53.0	24.2		9.5		22.7	13.1	B	8.9	43	7.6	53.1	B	9.5		50.7	55.1		8.6		49.4	1.3	K
9.3		58.3	45.4		9.5		32.5	17.2		9.0		22.1	25.5	K	9.5		56.8	18.9		8.8		49.4	34.4	
9.5	22	8.5	4.5		9.0		36.9	11.0	K	8.8		27.0	15.6	K	8.0	54	3.9	2.6	L	9.5	3	28.7	12.3	
7.8		17.1	25.6	L	8.9		40.9	55.0		8.8		33.2	38.0		9.5		8.0	14.9		9.5		50.1	38.3	
9.4		17.9	22.7	B	8.9		59.6	56.0	B	9.0		59.5	57.3		9.5		17.9	37.7		9.5	4	9.8	7.8	
9.3		34.8	30.3		6.7	35	1.6	7.1	K	8.5	44	3.0	18.2	K	7.6		28.0	19.6	K	9.5		10.0	40.1	
8.3		36.0	15.5	R	9.5		6.9	12.6		9.4		6.3	47.3		9.5		31.3	56.3		8.9		10.0	56.8	K
9.3		40.4	21.9	R	9.0		19.3	58.9	K	8.7		6.6	42 3	B	8.1		41.1	27.0	K	9.5		13.4	26.5	
8.2		41.1	47.1	B	9.5		19.8	19.5		9.3		8.9	33.9	B	9.5		42.4	17.5		9.5		21.0	56.8	
9.5	23	9.6	7.3		9.5		28.8	18.5	B	9.4		15.4	41.7		9.5		55.3	26.2		9.0		25.0	44.9	
7.3		42.1	24.6	R	9.3		43.2	0.4		9.3		42.5	31.7		9.5	55	11.8	41.6		9.4		28.5	55.9	
9.5		55.4	55.2		9.5		46.8	21.2		5.7		48.9	14.2	K	9.3		29.4	31.4		9.1		38.5	11.5	
8.9	24	0.5	23.5	B	9.5		50.4	23.5		9.5		49.8	42.9		9.2		32.8	10.0		9.4		49.4	45.6	
9.5		4.6	26.7		9.5		50.6	48.2		9.4		53.5	31.5		9.4		34.2	20.0		9.5	5	6.9	35.2	
9.3		6.8	37.4	B	7.2	36	36.1	30.6	L	9.1		54.3	27.9	B	9.3		48.1	57.1		8.7		22.4	27.8	
9.2		13.3	46.8		9.5		37.2	36.5		9.0	45	16.3	42.9	K	9.5	56	16.1	37.9		9.5		23.4	15.1	B
8.0		13.9	12.0	K	9.5		37.4	13.0		8.3		52.4	54.1	K	9.2		16.7	23.9		9.5		27.6	59.6	
9.0		25.0	41.2		8.8		46.4	51.3		9.0	46	6.3	44.4	K	9.5		21.0	21.4		9.5		50.8	5.2	
9.4		38.1	31.3		9.5		49.5	17.2		8.0		15.0	5.1	L	9.1		39.5	45.4		9.0		54.4	0.9	K
8.9		45.2	29.2	K	9.4		55.8	55.8	B	9.5		36.2	35.4		9.5		49.3	1.9		9.4		54.4	15.5	
9.5		49.0	20.6		8.8	37	2.5	57.2	K	9.4		53.9	7.2		9.5	57	9.8	18.3		9.5		59.4	40.3	
9.5		49.4	13.9		9.4		10.3	41.1		9.4	47	5.9	14.5		6.7		23.6	32.1	L	8.7	6	0.0	22.6	R
8.8	25	39.2	32.0		7 0		13.4	9.1	L	9.5		9.6	29.7	B	9.5		27.3	26.1		9.3		2.3	8.2	
9.3		49.8	5.4		9.5		15.2	2.6		9.5		23.4	52.7		9.5		30.3	24.1		9.5		12.2	43.1	
9.0		49.8	45.4	R	9.2		19.4	50.3	K	8.0		24.8	36.5	K	9.5		31.2	9.0		8.7		14.7	24.0	K
8.3	26	13.9	15.0		9.5		25.8	3.8		9.3		31.1	14.1	B	9.4		33.2	22.7		9.2		23.7	12.7	
8.1		16.5	56.0	K	9.4		31.4	55.2		9.3		31.8	45.1		7.0		48.7	58.2	B	9.4		31.5	46.3	
9.5		44.1	14.0		9.5		34.2	4.3		9.4		40.3	47.8		8.5	58	0.2	11.8	L	8.5		48.5	46.6	K
9.5		48.3	47.8		9.3		36.5	17.2	K	8.5		58.9	12.8	L	9.5		8.9	25.7		9.5		51.5	58.2	
9.3		55.5	26.6	R	9.5		42.2	34.5		9.5	48	1.3	40.5		9.2		18.2	32.0		8.7	7	4.9	24.1	K
9.5	27	38.2	10.8		9.5		42.5	49.3		8.9		7.2	37.7	K	8.2		33.5	2.8	B	9.5		31.5	10.0	
9.1		42.9	15.3		9.3		55.1	23.4		9.5		16.1	30.5		7.3		43.7	48.0	L	9.5		36.5	22.8	
9.5	28	59.9	9.9		9.5	38	13.9	8.8		7.1		29.0	3.1	K	9.4		44.8	32.5		8.8		49.9	37.3	K
9.4	29	10.2	35.7		8.9		29.0	15.0	K	9.4		30.2	40.6		9.4	59	4.1	56.2	B	9.4		56.5	13.2	
9.0		30.3	44.1		8.8		30.9	13.3	K	8.5		59.1	7.5	K	9.5		5.7	57.4		8.8	8	1.6	34.7	K
7.8		25.9	11.0		9.5	39	3.5	16.5		9.2	49	15.3	41.1		9.5		23.8	4.2		8.7		11.9	40.1	K
8.9		35.5	57.4	K	9.5		6.6	5.8		9.4		30.1	29.5		7.5		27.7	23.0	K	9.4		14.0	57.7	
9.3		44.9	24.2	B	9.5		21.3	6.8		9.2		52.8	47.8		9.5		32.7	48.1		9.1		18.1	12.9	
9.5		53.9	23.2		9.0		37.4	50.6		9.5	50	30.0	15.7		9.5		38.7	22.9		9.5		25.4	28.1	
6.5		55.0	15.6	K	9.1		48.0	20.7		9.5		32.3	42.2		9.5		40.8	20.5		8.9		26.0	23.4	B
9.0	30	20.0	17.1	K	9.2	40	1.4	50.8		9.4		45.1	6.9		9.5		41.0	23.0		9.3		27.6	22.8	
9.2		37.5	56.4		8.1		5.6	7.0	L	9.4		54.4	6.7		9.5		51.1	37.9		9.5		45.4	10.5	
9.0		41.2	35.2		9.3		6.5	20.6		9.3	51	46.2	38.0		8.7		53.4	37.5	L	9.5		50.7	37.1	
9.2		47.0	6.2		9.3		6.6	30.6		9.5		48.8	2.7		8.4		57.2	45.6	K	9.4		53.9	25.2	
9.0	31	12.1	29.6	S	9.1		44.9	14.5		8.9		53.1	27.9		9.4		57.6	49.7		9.1		55.8	51.5	
9.1		21.1	26.6	B	9.3		56.0	33.7	B	9.0	52	5.4	55.1		9.5	0	8.9	12.1		9.4		57.0	14.8	
9.3		25.4	52.8		8.6		59.4	55.2		9.5		18.3	10.1		8.0		23.3	17.6	K	9.0	9	10.0	12.1	K
7.7		40.1	28.1	R	9.5	41	6.0	18.4		9.5		36.1	30.3		9.5		34 4	14.7		9.5		13.0	40.3	
9.5		52.1	27.9		9.4		36.4	48.8		9.5		42.0	20.7		9.5		51.7	16.1		9.5		19.5	41.2	B
8.9	32	10.0	30.8		9.4		41.4	12.8		9.2		47.9	14.0	K	9.3		59.1	2.8		9.5		23.2	42.1	
7.5		28.3	42.6	R	7.7		58.1	24.6		5.9		57.0	42.5	K	9.5	1	3.7	14.4		9.0		25.0	25.3	K
9.4		29.2	33.0		8.9	42	22.9	13.0		9.5	53	0.6	58.5		9.3		32.3	1.4		9.5		30.2	29.8	
7.7		36.3	47.4	L	9.1		28.0	17.2	K	8.6		0.9	36.0	K	9.5		35.0	41.2		9.5		46.4	17.4	
9.5	33	0.6	35.9	B	9.5		33.5	34.3		9.4		5.0	13.2		9.5		47.6	39.2		9.5		56.7	3.0	
9.5		3.4	48.1		9.3		36.9	13.0		9.5		10.8	37.5		8.8		52.4	50.9	K	9.2	10	4.6	42.5	
8.3		20.1	23.6		9.5		37.6	25.6		9.5		18.4	7.8		9.4		55.9	13.1		9.3		13.9	4.2	
9.3		33.5	5.6		9.4		44.2	33.6	B	neb		21.2	18.8		9.2	2	1.8	4.2	K	8.9		25.5	45.7	
9.3		37.2	36.5		9.4		51.0	23.1		9.3		28.4	28.9		9.3		24.0	31.7		9.5		25.7	34.5	
9.1		47.5	57.7	R	9.1		55.9	11.0		9.3		34.5	47.4		9.5		27.8	2.5		9.5		46.0	55.0	

4001—4060				4061—4120				4121—4180				4181—4240				4241—4300			
	20ᵐ	+22°			20ᵐ	+22°			20ᵐ	+22°			20ᵐ	+22°			20ᵐ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	11 1.7	46.8		9.4	21 14.3	7.2		9.4	29 41.4	13.3		9.4	39 54.2	18.1		8.4	48 50.5	38.8	K
8.8	12.7	10.8		9.4	16.7	5.4		9.4	52.6	28.1		9.3	54.6	10.3	B	9.3	49 34.7	27.8	
8.5	20.3	43.2		9.3	28.1	57.2		9.5	57.9	24.6		9.3	55.3	24.6		9.5	36.8	31.2	
9.5	24.8	42.9		9.4	29.1	52.2		9.5	30 6.3	40.2	B	9.4	40 18.1	21.8		7.5	45.1	2.1	K
9.5	33.6	59.8		9.5	31.5	6.7		9.3	10.9	57.0		9.5	18.9	16.7		9.5	50 8.4	10.5	
9.0	44.9	2.1		9.5	34.3	15.5		9.2	15.6	4.1		9.2	25.1	2.3		9.5	14.5	9.4	
9.5	12 5.5	29.2		9.5	56.9	57.3		9.4	25.5	8.0		9.4	33.9	39.7		9.4	45.3	31.5	
9.5	13.1	50.9		9.5	59.9	18.7		9.5	35.7	2.7		8.8	45.6	20.2		8.5	46.4	19.6	K
8.0	30.1	28.9	K	9.5	22 15.0	58.6		9.2	50.8	3.4		9.3	46.0	39.2		8.9	55.7	7.9	
9.5	30.2	22.5		9.5	21.7	34.8		9.5	51.3	34.8	B	9.4	56.6	30.6	B	9.0	51 14.8	19.8	K
9.5	33.1	39.4		9.5	28.3	45.0	B	9.4	52.8	23.9		9.5	41 0.8	13.3		8.9	25.4	30.3	K
8.3	42.1	39.8		9.4	32.9	25.5		9.2	31 0.7	9.0		9.5	1.7	27.4		9.5	42.4	15.0	
8.1	13 9.7	32.7	K	9.5	43.5	29.7		9.0	51.6	50.6		9.0	5.5	33.2		8.8	47.4	53.0	
8.7	20.3	7.7		9.3	52.6	53.5		8.8	32 5.2	33.7	K	7.8	14.1	10.0	L	7.0	51.4	29.4	K
9.0	20.3	4.5		9.5	23 12.5	44.9		9.5	12.6	32.3	B	9.3	22.3	48.7		9.1	53.2	16.6	
9.5	20.7	11.4		9.3	23.1	39.8		9.5	16.3	13.0		9.5	36.6	22.6		9.3	58.7	25.1	
9.5	28.1	0.3		9 5	31.0	43.5		9.2	31.2	44.9		9.3	59.1	55.1		7.8	52 1.2	40.9	K
9.2	33.7	12.7		8.6	35.0	37.1	K	9.5	32.3	29.3		8.6	42 5.6	34.6		9.2	18.4	18.7	
9.5	35.2	18.9		9.5	36.3	41.2		9.5	36.7	7.7		7.7	6.7	28.7	L	8.5	26.0	0.3	
9.5	14 16.2	28.1		9.9	45.0	29.9		9.4	40.9	34.3		9.5	11.9	17.5		9.5	42.4	0.0	
8.8	25.3	39.4		9.3	54.9	37.9		8.8	33 0.2	43.5	K	9.5	22.3	39.2	B	9.5	48.0	26.3	
9.3	28.1	2.9		8.9	24 5.7	45.6	K	9.5	20.7	36.5		9 5	22.8	42.8		9.5	53 6.8	58.1	
9.5	28.5	37.5		9.5	6.2	54.5		9.3	46.1	29.2		8.0	26.2	27.7	K	9.5	17.3	12.6	
9.1	31.6	18.1		9.5	17.9	17.6		8.7	34 16.5	13.0	K	9.5	26.8	6.3		9 5	31.0	56.9	
8.5	32.5	29.7		9.5	39.2	45.4		9.4	17.7	4.7	B	9.5	37.0	39.5		9.5	33.2	9.0	
9.0	33.0	1.2		9.5	50.1	40.9		8.8	21.8	38.8		9.2	40.1	42.0		9.5	33.8	0.2	
8.8	15 7.8	38.4	L	9.5	53.8	19.6		9.5	28.1	4.7	B	9.1	41.3	35.9		9.5	49.0	53.9	
7.2	12.2	23.5	L	9.3	25 3.5	34.9		9.5	29.7	1.9		9.5	48.0	37.6		9.3	54 2.1	55.5	
9.1	13.4	3.0		9.4	18.0	33.1		9.5	30.7	2.2		9.5	43 2.3	10.9		8.6	21.9	50.7	K
9.5	33.0	19.7		9.4	29.0	22.6		9.3	39.8	36.4		9.5	3.1	19.6		9.5	32.0	45.7	
9.5	43.7	14.2		9.5	32.7	49.5		9.2	54.8	9.4		9.4	34.0	12.9		9.5	39.2	35.7	
8.7	46.5	19.6	L	9.3	43.1	29.5		9.2	35 15.2	58.1		9.5	34.3	29.6		9.5	52.7	8.4	
9.3	49.2	22.1		7.0	47.0	20.1	K	9.5	18.5	26.0		8.5	39.1	41.9	K	9.3	54.9	8.0	
9.1	56.8	32.5	B	9.5	26 14.2	35.5		8.4	25.4	3.1	K	8.8	44 1.2	1.6		9 5	55 27.2	27.7	
9.5	16 5.8	12.9		9.3	16.1	42.6		7.8	26.5	28.0	K	8.0	1.6	20.9	R	9.5	38.0	21.7	
9.3	11.7	57.1		9.5	25.6	49.6		9.5	52.5	15.4		9.3	2.7	13.0		8.9	46.6	31.2	
9.5	29.5	58.8		8.8	35.3	21.3	K	9.5	36 5.7	38.5		7.8	12.5	11.5	R	9.3	53.0	30.6	
9.5	55.6	6.2		8.9	35.3	17.1	K	9.2	14.1	9.4		9.4	16.8	37.5		7.3	54.6	45.5	L
8.9	56.2	46.3		8.9	45.5	54.2		9.2	20.6	18.5		9.5	38.8	57.6		9.5	56 9.4	20.3	
9.5	17 17.6	17.1		9.5	57.3	20.5		9.5	23.8	45.4		9.5	59.2	26.4		9.5	32 9	40.4	
9.5	20.2	30.7		8.1	27 2.6	29.5	L	9.5	39.7	6.9		8.6	45 1.3	5.2		9.4	35.0	26.5	
8.5	40.0	31.3		8.6	6.3	20.6	K	8.8	40.9	6.6		9.3	11.2	47.4		9.5	57 6.1	57.0	
9.3	59.0	12.2		8.6	18.7	49.3		8.6	54.0	28.3	K	7.6	25.8	47.4	K	9.5	12.8	23.0	
9.3	18 38.0	34.3		9.3	30.2	34.8		8.8	37 6.9	45.1		9.4	46 2.4	5.0	B	9.5	15.7	30.6	
8.5	49.4	16.9	K	9.3	31.5	59.3		9.5	40.3	16.0		9.4	5.6	45.0		9.2	24.9	6.5	
9.0	49.4	15.4	K	9.5	34.4	47.5		9.3	38 1.8	44.1		9.5	9.8	52.0	B	8.7	25.7	47.4	B
8.0	56.4	58.4	K	8.8	46.6	24.3	K	9.2	10.2	56.6		9.5	12 5	3.5		8.7	27.9	2.3	K
9.0	19 7.2	34.4	K	9.5	28 1.0	44.7		9.5	15.3	15.0		9.4	28.6	24.7		9.0	28.3	51.1	
9.5	40.7	46.5		9.5	8.3	46.2		9.3	24.5	38.8		9.5	31.4	35.7		8.6	58 0.6	30.2	K
9.1	41.6	28.8		8 9	30.4	26.4		8.7	26.2	39.5		9.1	47 12.5	10.7		9.5	21.0	35.7	
9.5	48.0	20.2		9.0	36.9	56.7	K	9.3	27.6	59.1		8.5	22.6	10.6	K	9.3	21.7	45.0	B
9.2	20 0.2	10.3		9.1	46.0	36.6	R	9.4	42.4	44.4		9.3	29.2	3.9		9.5	31.4	17.9	
9.5	26.7	2.7		9.1	46.4	25.4		8.6	39 1.0	14.1		9.2	45.9	45.1		8.5	38.9	54.9	K
9.5	38.9	35.3		9.5	48.0	5.5		9.4	5.6	47.2		9.5	54.6	57.2	B	9.5	47.0	28.5	
9.4	41.0	36.6		8.9	55.2	34.3	K	9.5	10.3	20.1		9.0	48 8.7	39.3		9.5	59.7	51.5	
9.5	45.3	4.5		9.3	59.1	51.9		8.0	16.5	29.3	K	9.5	16.6	2.8		9.2	59 8.4	30.6	
9.5	46.3	57.7		9.3	29 11.1	0.3		9.4	21.3	47.6		8.7	19.0	58.3		9.5	15.4	43.6	
9.5	54.8	51.2		9.4	18.2	22.8		8.0	21.3	24.0	K	9.5	30.5	36.5		9.4	17.8	53.7	
8.9	21 2.2	10.3		9.3	25.7	30.1		8.9	23.0	2.9		9.5	46.7	0.3		9.4	24.7	36.5	B
9.5	6.6	4.8		9.3	36.4	1.6		9.5	44.0	37.0		9.2	50.2	42.7		9.2	26.2	43.6	

4301—4360				4361—4420				4421—4480				4481—4540				4541—4600			
	20ᵘ—21ᵘ	+22°			21ᵘ	+22°			21ᵘ	+22°			21ᵘ	+22°			21ᵘ—22ᵘ	+22°	
m		′ ″		m		′		m		′		m		′		m		′	
9.3	59′ 32.6	2.7		9.5	12′ 6.9	58.2		9.5	26′ 38.5	57.2		9.5	41′ 20.3	15.6		9.5	56′ 58.4	57.6	
9.0	49.7	16.3		9.5	11.3	19.4		9.2	41.1	2.1		9.5	57.7	3.1		9.0	57 21.2	14.1	
9.3	50.1	22.1		9.2	27.2	5.7		7.5	53.8	24.2	K	9.5	42 8.1	22.9		9.0	45.0	8.1	
9.2	55.8	9.3		8.2	44.1	52.3		9.4	54.9	35.9		8.5	50.0	53.3	K	9.5	48.6	57.4	
9.3	0 20.0	36.8		9.5	52.8	32.5		9.0	27 3.1	32.2	K	9.5	51.4	9.2	B	9.1	57.3	39.5	
9.1	20.3	30.8	B	9.4	13 3.4	52.2		9.5	5.0	10.2		9.3	43 0.9	18.7		9.4	59 2.5	32.0	B
9.1	22.2	31.5		9.4	10.6	47.1	B	9.4	16.5	37.6		9.0	7.2	43.0	B	9.5	6.3	39.2	
9.5	33.3	54.8		9.4	16.1	49.6	B	9.2	30.6	32.1	B	8.6	18.5	36.8	B	9.4	13.1	30.5	
9.4	37.2	0.7		7.8	17.8	7.3		9.3	51.3	12.3		9.4	20.6	39.7		8.9	23.4	34.8	B
9.5	41.1	33.8		9.5	30.8	43.7		9.1	55.0	14.8	B	9.2	24.8	1.3	B	9.5	25.0	3.6	
9.5	50.2	44.9		9.1	45.8	38.0		6.7	57.2	7.4	K	9.5	47.0	1.3	B	9.4	28.0	32.0	
9.5	52.2	13.7		9.0	50.3	27.7		9.5	28 8.1	56.5		9.5	44 5.1	43.1		8.6	46.6	39.3	
8.2	58.7	49.7	K	7.8	14 49.8	16.6	K	9.0	17.2	49.6		8.0	37.5	11.1	K	9.1	0 27.2	21.0	
8.7	1 16.6	17.2	B	8.8	51.2	40.3	K	9.3	20.8	14.6		9.3	40.5	17.9	B	8.9	42.6	44.7	
9.5	24.7	32.4		9.4	55.6	43.7		9.2	42.5	9.9	K	9.2	45 18.4	54.4		9.5	1 0.6	25.1	
8.7	29.7	53.2	K	9.0	15 39.5	37.0		9.3	58.6	52.5		9.5	19.1	46.3		8.9	10.5	9.3	
8.8	35.2	47.8	K	8.3	16 4.5	50.9	K	9.3	30 10.1	33.2		9.5	22.3	59.7		9.5	11.6	59.5	
9.3	35.9	30.1		9.4	6.0	15.2	B	9.5	11.0	37.4		9.5	46 15.4	5.5		8.9	2 21.5	16.4	B
8.4	51.4	17.7		9.3	6.3	58.5		9.1	47.3	42.8	B	9.1	18.8	31.4	B	9.5	30.3	38.2	
9.5	2 3.6	58.3		9.5	7.7	1.6		9.5	54.7	39.0		9.1	21.8	48.7		9.5	38.4	55.4	
9.5	56.8	41.7		9.5	13.0	33.4		9.3	31 4.0	3.7	B	9.4	52.0	24.2	B	8.9	46.6	8.8	
9.5	3 0.8	23.9		9.3	19.5	29.1		9.2	4.8	16.4		9.5	47 24.0	57.2		9.5	52.6	20.6	
8.0	5.1	20.7	K	9.5	36.3	33.2		9.0	22.5	4.1		9.4	28.8	46.3		7.3	3 15.9	24.7	K
9.4	12.4	56.7		8.9	48.5	40.5	B	9.5	23.1	30.1		9.5	37.7	52.0	B	9.5	24.0	7.9	
9.4	35.0	22.9		9.5	17 13.4	27.8	B	8.8	41.0	57.0	K	9.4	43.8	27.7		9.5	36.1	23.4	
9.4	51.9	53.8		9.5	42.5	49.1		8.7	52.7	57.9	K	9.3	49 24.5	57.3		9.2	42.5	30.9	
9.1	4 1.8	22.8		9.0	49.8	34.2		9.4	59.8	8.0		9.5	32.2	3.5		8.8	48.7	4.7	K
9.5	9.7	15.0		9.4	18 4.0	34.7		9.5	32 3.1	45.2		8.1	38.5	10.8	K	8.8	4 1.8	5.0	K
9.1	5 15.0	5.7		9.5	31.0	48.0		9.5	3.3	51.8		9.1	50 22.1	12.2		8.3	8.4	53.3	K
8.5	15.2	59.6	K	9.5	31.7	57.6		9.3	20.6	51.3		7.7	44.8	54.9	K	9.5	21.1	57.8	
7.9	25.3	29.7	K	9.5	37.0	42.5		9.5	22.9	11.0		8.3	53.9	51.4	K	9.3	22.8	49.2	
8.8	58.3	34.8	K	9.4	40.1	14.3	B	9.5	28.6	58.5		9.3	59.5	33.5		9.2	23.7	50.7	B
9.5	6 18.0	6.0		9.4	19 56.3	42.1		9.3	43.1	50.7		9.1	51 23.5	44.1		9.5	48.4	2.9	
9.3	18.3	54.7		8.7	20 0.1	18.7	K	9.0	58.5	35.9		9.5	44.2	43.8		8.8	5 0.7	23.7	K
9.5	29.4	16.3		9.1	23.7	5.5		8.8	59.1	43.1		9.3	45.5	24.2		9.5	23.2	44.5	
9.2	30.7	50.7	B	9.5	28.5	58.0		9.5	33 38.8	59.8		9.4	46.6	4.6		9.5	31.8	4.3	
9.5	51.8	7.6		9.5	21 19.1	38.3		9.3	41.5	37.4	B	8.1	47.5	51.7	K	9.3	33.2	48.3	B
9.2	7 4.9	2.0		9.0	44.0	18.8		9.2	55.1	30.4		9.3	52 0.2	16.6		9.5	6 2.2	51.1	
9.5	15.1	45.9		8.8	57.9	2.3		9.1	55.6	22.9		9.4	8.2	10.6	B	9.4	5.4	45.6	
9.5	8 35.4	25.4	B	9.5	22 15.0	13.6		8.2	34 0.0	31.9	K	9.3	45.1	12.1		9.4	8.6	26.6	
9.1	42.0	45.6		9.3	29.5	16.7		9.4	15.6	10.1	B	9.5	55.8	35.7		9.5	10.5	57.8	
8.5	9 1.5	54.4	K	9.4	31.7	6.5		8.8	35 31.2	22.5		9.5	56.5	57.3		9.5	26.5	53.0	
9.0	6.6	27.7		9.0	23 12.7	51.9	K	7.2	36 16.4	39.2	K	9.0	53 5.4	11.5	K	9.4	41.8	51.1	B
9.2	33.3	44.5		9.2	42.9	55.0	B	8.6	39.8	22.9	K	9.5	32.3	51.9		8.8	43.6	25.1	R
9.3	41.7	48.2	B	9.2	50.1	46.5	K	6.5	37 19.3	9.6	K	9.5	54 32.6	56.9		9.5	50.4	16.2	
9.3	43.7	55.5		9.5	56.2	10.5		9.4	38 26.9	0.2		8.5	45.7	32.1		9.0	56.3	38.2	K
9.3	0 4.6	13.1		9.5	24 3.0	19.2		8.5	28.4	13.2	K	9.4	46.7	53.6		9.5	7 22.2	28.1	
9.1	20.0	31.8		9.5	3.0	26.3		8.5	29.0	14.9	K	9.5	55 0.9	36.8		9.3	31.8	54.7	
9.5	20.2	56.8	B	9.1	24.5	43.1	K	8.5	30.3	44.1		8.2	6.1	53.0	K	8.2	43.4	55.2	B
8.3	27.3	4.1	R	9.2	41.5	16.3		9.5	32.2	59.3		9.3	7.6	59.7		9.5	53.9	16.8	
9.0	28.8	36.8	K	7.7	46.5	6.2	K	9.4	39 21.1	45.6		8.0	18.1	47.1	K	9.5	57.3	13.4	
9.3	53.9	1.6		9.2	46.6	52.8		5.0	24.2	16.9	K	9.2	42.3	8.6		9.0	8 27.4	24.7	R
9.5	58.0	51.5		9.4	25 15.5	32.2		9.5	39.5	52.8		9.4	43.3	23.9		8.8	47.8	22.7	K
9.5	11 10.3	12.2		9.5	17.8	14.8	B	7.0	40.4	16.7	K	8.0	47.8	53.5	K	9.0	57.2	30.1	
9.1	12.4	58.8		9.5	43.1	8.3		9.1	57.8	16.3		9.3	56 13.1	47.3		9.3	58.4	7.9	R
8.8	26.7	5.0		9.5	48.3	6.8		8.9	40 7.4	15.9	K	9.5	20.8	27.6		9.3	9 10.1	47.6	B
9.5	28.3	44.1		8.8	50.3	57.7	K	9.3	18.6	27.1		9.5	28.8	27.3	B	9.5	18.5	35.8	
8.4	34.1	34.2		7.0	52.2	44.2	K	9.0	19.5	3.0		9.5	34.3	3.5		9.5	21.0	47.8	B
9.5	34.3	49.7		9.4	26 5.3	3.8	B	9.0	23.4	49.6	K	9.5	42.9	20.0	B	9.5	21.0	11.7	R
9.0	12 4.4	7.9		8.8	17.3	52.8	K	9.2	41 8.5	56.6		8.8	48.3	43.3		9.5	46.4	34.7	

4601—4660				4661—4720				4721—4780				4781—4840				4841—4900			
	22ᵘ	+22°			22ᵘ	+22°			22ᵘ—23ᵘ	+22°			23ᵘ	+22°			23ᵘ	+22°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
6.7	9 50.9	10.9	K	9.5	26 15.9	27.0		9.5	44 3.2	10.6		7.8	1 13.0	14.7	K	9.0	21 6.3	58.3	B
9.4	10 15.6	51.7		9.4	36.8	44.6		9.5	15.9	30.9		9.1	36.1	11.2		8.8	8.6	3.0	
9.5	48.9	8.7		9.4	49.5	2.1		9.4	32.9	12.5		9.3	42.5	48.2		9.2	8.6	54.5	
9.1	54.6	20.6		9.5	27 27.1	45.9		9.4	45 0.3	29.7	B	9.3	45.6	21.2		6.8	53.7	15.7	K
9.3	58.5	11.8		9.5	40.1	10.2		9.2	1.5	38.8		9.2	52.2	6.5		9.1	22 20.4	38.9	B
9.4	11 17.8	5.2	B	9.0	50.0	33.9		8.4	17.1	6.4	K	7.7	2 27.7	48.4	K	8.6	25.8	21.2	
9.5	20.4	32.6		9.0	28 14.2	31.1		8.3	21.9	18.1		9.0	39.0	54.0		9.4	23 5.2	0.7	
9.2	22.6	51.0		9.5	32.8	48.4		9.3	46 13.5	35.8		9.5	3 8.5	41.6		9.3	11.4	6.2	
9.5	40.9	3.7		9.4	49.3	13.2		7.8	31.2	38.2	K	9.5	25.6	27.8		8.5	24 0.3	47.1	
9.5	42.5	15.5		9.5	29 6.9	29.7	B	9.1	47.3	1.0		9.5	4 22.8	13.8		9.5	26.6	22.0	
9.5	12 1.1	53.9		8.5	8.4	34.3	K	9.5	51.6	57.1		9.5	29.2	34.2		9.4	32.3	34.8	
9.1	3.3	7.1		9.5	30.1	55.6		9.3	47 0.5	5.1		9.3	5 52.3	58.7		9.5	33.1	30.3	B
9.4	5.6	9.2		8.5	32.4	30.9	K	9.3	9.4	44.0		8.0	6 10.2	33.1	B	9.5	33.2	17.1	
9.0	12.6	46.7		9.5	50.0	45.0		9.5	17.4	59.8		8.3	7 7.0	22.7		8.5	39.4	51.2	
9.4	56.7	6.3		9.1	50.8	23.5	B	9.5	39.1	23.5	B	9.5	40.0	39.5		9.5	56.0	35.3	
9.5	13 45.9	30.5		9.5	58.4	4.7		9.5	48 4.9	42.3		9.5	8 49.4	19.9		9.5	25 19.5	56.8	B
9.5	46.3	4.7		6.5	30 18.3	44.5	K	8.5	13.2	12.7		9.5	9 47.1	51.6		9.5	37.4	17.9	
7.8	52.9	19.5	K	9.5	31 50.2	7.1		9.1	31.5	23.7		9.1	10 15.5	4.3	R	9.5	54.1	11.7	
9.3	14 6.6	29.2		9.5	59.8	23.6		9.5	39.2	59.7		9.5	35.3	11.9		9.4	26 11.0	26.8	
9.5	37.8	0.1		9.5	32 1.4	54.9		9.5	58.6	40.5		9.4	56.0	13.5	B	8.9	39.8	54.1	
9.1	52.5	31.9		9.4	4.5	7.4	B	9.4	59.5	1.7		8.2	57.1	0.0	K	9.4	57.2	49.4	
9.5	15 2.3	36.9		9.5	17.4	36.7		6.8	49 21.2	9.9	K	9.5	11 24.7	34.3	B	9.0	27 3.7	38.1	
9.5	39.4	40.3		8.9	37.4	51.0	K	9.5	50 15.3	44.3		9.5	37.3	28.5		9.4	44.5	1.2	
9.4	49.9	41.8	B	9.5	56.8	38.7		8.0	47.0	52.9		8.5	44.4	3.6	K	9.4	50.4	11.5	
9.4	55.5	12.7		6.9	59.2	7.4	K	8.1	52 3.2	27.8	R	9.3	44.4	7.6		9.2	52.0	40.6	
9.0	16 30.1	15.7	B	9.3	33 11.5	55.6		9.5	35.9	6.0		9.2	47.0	23.0		9.4	53.9	19.8	B
9.5	43.9	24.0		9.5	14.3	10.9	B	9.1	56.4	32.3		8.4	52.5	15.8		9.3	56.1	37.9	
9.5	17 38.6	53.7	B	9.5	22.7	17.8		9.5	39.3	17.5		6.3	13 1.6	17.2	K	9.0	28 2.7	53.7	
9.2	46.9	53.7	B	9.5	28.6	33.6		9.3	41.0	9.4		8.8	5.0	29.6		9.5	16.5	26.1	
9.5	58.0	44.2		9.5	38.4	8.8		9.5	47.9	50.5		5.0	29.5	56.8	K	9.0	23.6	11.5	R
9.5	58.9	51.7		7.5	34 15.6	6.0	K	8.8	53 11.9	38.4		8.8	14 0.4	13.0		9.5	23.9	3.5	
9.5	18 6.5	48.6		9.0	21.4	34.9		9.3	17.5	57.8	K	9.4	39.0	21.3		8.8	54.8	43.8	K
9.2	7.7	59.1	B	8.9	26.4	27.4		9.5	26.6	55.6		9.1	39.5	27.5	B	9.3	29 11.4	35.0	
9.5	18.6	15.9		9.4	43.1	15.5		9.5	31.1	27.4		9.4	41.7	29.0		9.1	30.9	58.4	K
8.9	19.2	7.0		9.1	47.8	13.5	B	9.1	43.9	30.5		9.3	42.9	53.0		9.4	59.2	6.8	
9.4	24.6	57.3		9.2	35 9.7	53.3		9.5	51.0	5.6		7.5	15 4.6	45.9	K	8.4	30 6.3	47.0	
9.1	34.5	4.5		8.9	16.2	28.8		8.3	54 11.2	35.4		9.5	6.2	54.8		9.5	44.0	25.6	
9.1	19 13.3	55.4		7.7	36 8.2	15.4	K	9.5	18.7	9.3		9.0	14.1	35.8		9.5	44.2	22.7	
9.1	16.7	32.1	B	9.4	23.5	24.7		9.0	26.5	39.7	B	9.3	19.9	27.5		8.8	31 28.7	43.8	
9.4	29.9	34.9		9.1	39.1	19.5	R	6.9	31.5	17.2	L	9.5	55.7	11.0		6.8	33.1	30.8	K
9.5	43.4	18.9		9.1	44.8	25.0		8.3	55 10.2	57.2	K	9.5	16 17.4	4.5		9.4	55.8	6.4	B
7.2	52.4	4.5	K	9.1	37 37.1	24.3		6.0	19.3	32.5	K	8.7	38.6	48.6	B	9.5	55.8	10.2	
9.4	20 54.7	10.7		9.4	45.4	27.4		6.6	41.9	23.0	K	9.3	58.2	55.7		9.1	59.6	26.8	
9.5	21 10.6	32.3		9.5	38 1.9	2.3		8.9	59.3	11.6		8.7	58.8	27.1		9.5	32 0.2	51.5	
8.2	20.1	47.0	S	9.5	15.3	3.3		8.6	56 13.0	29.9	K	9.5	17 3.3	8.3		9.2	11.2	58.4	K
8.8	22 0.4	28.8	R	9.5	26.0	44.7	B	9.5	20.6	20.2		9.1	4.8	3.0		9.5	34.4	53.1	
9.5	30.9	26.3		8.7	37.4	19.8	K	7.3	32.3	36.4	K	7.2	10.0	57.5	R	9.5	41.7	34.2	
9.0	23 2.2	4.6		9.3	39 33.3	27.1		8.5	36.9	44.7		9.0	30.5	53.9		9.5	33 18.2	5.2	
9.0	5.1	14.1	K	3.9	34.9	48.4	R	8.9	42.6	23.0		7.8	35.5	40.6	R	9.4	26.1	29.9	B
9.5	10.0	18.8		9.4	41.5	26.0		9.1	57 9.9	39.8		8.9	50.9	5.6		9.5	34 26.2	14.6	
9.4	19.3	33.3	B	9.5	40 8.4	34.7		9.5	33.3	56.4		8.1	55.0	16.2	K	9.5	35 31.7	3.2	
9.4	20.1	14.5	B	9.0	37.4	4.4		9.5	43.6	33.3		8.5	58.0	43.6	K	9.4	58.9	31.8	
9.4	31.5	29.6		9.5	49.7	21.9		9.1	58 32.5	41.3		4.5	18 8.7	36.7	K	8.9	36 5.8	17.0	
9.3	52.3	9.0		9.2	41 23.7	34.7		8.9	39.3	4.9		8.7	51.1	56.1	K	9.0	23.3	35.0	
9.5	25 19.8	53.9		9.3	42 7.8	19.4		9.3	59 41.5	25.1	B	8.6	19 25.8	53.7	K	9.3	32.1	51.0	
8.8	24.1	34.2		9.5	12.5	39.5		9.5	50.9	4.2		9.5	20 19.2	59.5		9.5	37 17.9	43.9	
9.5	32.2	57.3		9.3	26.9	50.3		9.4	54.8	7.7	B	9.5	40.9	11.6		9.5	45.8	22.3	
9.4	39.4	30.1		9.5	30.4	1.5	B	8.9	56.1	49.9		8.4	44.2	47.8	K	9.4	48.5	55.6	
8.4	40.1	38.7	K	9.5	43 33.3	2.7		9.5	0 31.2	59.5		8.8	51.3	47.2	K	9.3	48.9	49.4	
8.5	46.9	46.6	K	9.2	57.6	56.1		8.8	36.0	15.8		9.5	54.9	48.9	B	9.3	38 48.5	6.4	

4901—4912				4913—4924				4925—4936				4937—4947				4948—4957			
	23ʰ	+22°			23ʰ	+22°			23ʰ	+22°			23ʰ	+22°			23ʰ	+22°	
m		′		m		′		m		′		m		′		m		′	
9.5	38′ 57.0	6.0		9.3	43′ 23.1	43.3		9.5	46′ 56.5	22.8		9.5	52′ 21.6	18.0		9.5	56′ 20.7	31.4	
7.8	39 5.6	39.1	K	8.8	44 1.0	29.5	K	9.3	47 5.7	6.7		9.5	39.9	15.2		9.5	46.3	17.3	
9.5	22.9	23.0		9.0	14.1	13.4		9.1	6.3	5.9	B	8.0	50.4	43.3	K	7.5	57 27.0	27.9	K
9.1	29.5	45.1		9.2	16.5	34.8	B	9.5	33.2	9.0		7.8	53 23.5	43.4	K	9.4	58 3.4	57.0	
9.5	40 2.7	24.3		9.5	45.1	14.6		8.9	41.4	16.3	R	8.6	27.7	56.1	K	8.9	43.3	57.5	
9.4	41 13.9	42.5		9.3	46.1	8.5	B	8.0	48 41.9	38.4	B	9.5	54 12.1	1.9		9.5	59 7.0	30.5	
9.3	42.4	36.7		8.8	45 19.4	9.8	K	8.2	45.3	4.8		8.2	37.5	58.9	K	8.5	20.5	40.7	K
6.6	58.9	2.6	K	8.6	44.1	16.9	K	9.4	49 58.5	24.0		9.5	55 50.9	27.9		7.7	35.4	1.9	K
8.5	42 7.1	36.7		9.5	56.4	48.5		9.3	50 3.1	44.4		8.8	55.3	42.7	K	8.8	50.0	49.5	K
9.2	17.8	0.4		9.5	57.6	53.8		9.3	17.8	20.7	B	8.8	58.0	45.8	K	9.2	58.2	20.7	
9.5	26.2	9.4		9.5	46 24.4	58.7	B	8.8	24.4	4.1		9.2	56 6.4	59.8					
7.9	49.4	59.9	K	8.5	43.9	41.6		8.8	51 43.6	38.3									

Zone +23°

1—20				21—40				41—60				61—80				81—100			
	0ʰ	+23°			0ʰ	+23°			0ʰ	+23°			0ʰ	+23°			0ʰ	+23°	
m	′	′		m	′	′		m	′	′		m	′	′		m	′	′	
9.5	0′ 1.7	47.1		9.4	7′ 7.4	59.2		8.5	13′ 53.5	52.9		9.5	19′ 54.3	35.0	B	9.4	28′ 3.8	50.9	
8.5	5.0	30.6	K	9.0	17.7	45.3		9.5	14 29.7	15.0		9.4	20 2.6	31.5		7.0	32.1	14.4	K
9.5	13.0	6.5	B	8.5	18.8	36.8		7.3	45.1	52.9	K	8.5	21 28.1	14.7	K	9.3	29 12.0	28.2	B
9.5	1 25.8	59.2		9.4	47.0	29.3		9.3	15 4.4	45.7		9.3	55.5	55.0		6.0	29.2	13.0	K
9.0	47.6	5.5		8.9	56.0	15.8	B	8.5	9.6	46.0	B	8.5	22 33.7	49.5	K	9.2	33.8	18.2	B
9.5	2 28.1	55.0		9.4	8 12.4	55.4		9.0	10.0	5.3	K	8.0	55.1	18.1	L	9.5	30 9.0	54.7	
8.8	3 12.7	26.8	K	9.5	55.3	49.2		8.9	27.8	0.0	R	8.8	59.4	8.2	R	9.5	31 23.4	31.9	
9.4	19.2	59.6		9.0	9 9.0	46.5	K	9.4	52.6	48.5		9.5	23 20.1	37.0		8.5	32 0.1	45.6	K
8.9	35.7	11.0		9.5	15.2	7.5		9.5	16 34.1	41.6		9.1	24.2	14.0		9.5	10.8	26.8	
8.0	57.6	0.9	K	8.1	44.9	51.8	K	9.2	17 19.0	22.0		8.5	24 3.5	16.8	K	9.0	15.1	38.5	
9.5	4 57.1	27.5		9.3	10 6.4	15.5		9.2	30.4	36.6	B	9.1	30.4	31.3		9.1	35.9	4.4	
8.0	5 4.1	49.9	K	9.0	45.5	44.0	K	8.2	34.1	46.7	K	8.9	53.1	5.1	K	6.5	41.4	15.4	K
9.5	16.2	40.2		9.0	11 50.0	57.8		9.0	34.8	26.0	B	9.3	54.7	25.7	B	8.0	52.0	47.8	K
9.5	18.1	53.7		8.5	12 0.7	55.9	K	8.5	18 32.0	11.0		9.1	25 6.2	25.5	B	6.0	33 56.5	50.8	K
9.5	28.3	47.4		8.9	13.4	13.7	K	9.2	48.9	5.5		8.8	8.0	54.8		9.5	34 10.6	29.8	
9.5	6 4.6	10.6		9.3	34.6	55.6		7.2	49.1	56.1	K	9.0	26 29.5	51.5	K	8.1	30.7	19.9	K
9.5	15.3	56.5		9.0	35.9	50.9		9.3	19 3.0	53.2	B	9.3	40.8	54.2	K	9.5	35 59.5	5.0	
9.4	32.4	30.8		7.0	43.2	52.2	K	8.0	18.6	49.7	K	9.3	48.4	22.6		9.3	37 4.6	56.6	
9.5	34.6	34.0		9.0	48.1	20.2	K	9.2	19.3	6.2		9.5	27 26.1	50.2		9.5	10.4	40.6	
8.9	7 4.0	49.8		8.8	49.7	31.6	K	8.7	31.9	10.3	K	8.9	49.7	43.3	K	9.4	44.7	54.3	

+23° 0°—2°

101—160				161—220				221—280				281—340				341—400			
	0ᵘ—1ᵘ	+23°			1ᵘ	+23°			1ᵘ	+23°			1ᵘ—2ᵘ	+23°			2ᵘ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	38 8.8	55.4		9.5	7 39.9	4.1		9.0	32 0.4	1.1	K	9.2	56 34.1	28.3	B	9.2	27 8.6	13.6	K
8.7	13.0	3.2	R	9.3	43.3	23.5		8.0	33 29.6	26.7	K	9.5	48.9	16.1		9.2	37.0	9.2	
8.7	37.8	30.7	K	9.1	8 3.3	37.0		9.1	34 14.0	38.0	B	9.5	57 16.5	56.1	B	9.5	38.1	54.5	
9.4	48.7	45.2		9.3	14.9	27.7		9.5	30.7	51.5		9.2	32.1	13.7	K	9.5	53.2	22.0	
9.5	54.9	9.0		9.3	21.4	54.0		9.5	34.3	54.7		7.3	58 20.7	38.7	R	9.3	28 35.8	33.6	
3.9	39 41.1	28.3	K	9.5	27.8	17.4		9.0	44.7	37.2	B	9.5	59 33.0	31.3		9.2	54.6	35.0	
9.4	42.0	37.9		8.8	32.5	0.7		9.3	45.2	38.0	B	8.2	0 3.4	14.6	K	9.3	30 41.4	25.8	
9.3	48.6	36.0		9.2	50.4	44.6	B	9.5	35 25.6	31.9		9.3	1 4.1	36.9	K	9.5	47.1	52.8	
9.5	53.1	6.6		9.5	55.0	1.9		9.1	36 43.5	6 3	K	9.5	10.5	8.4	B	8.6	52.0	41.6	K
8.6	40 35.2	3.0	K	9.0	9 1.9	26.3	K	9.0	50.5	55.2		9.2	2 4.4	19.1		8.8	31 12.8	50.2	K
9.5	46.7	43.2		9.0	29.0	32.9	K	9.2	37 29.8	1.2		9.4	14.1	59.0		9.1	29.4	15.3	
9.5	48.0	14.0		9.5	44.4	4.8		9.5	59.7	36.9		9.5	17.7	54 0	B	9.2	53.6	40.0	K
8.9	41 46.0	30.8		8.3	10 20.0	6.6	B	9.5	38 14.1	38.3		8.0	45.5	7.0	K	9.0	32 38.0	44.1	K
9.5	42 11.8	39.5		9.1	39.2	59.3		9.4	40.7	2.5		9.4	3 9.9	13.0		8.9	47.1	57.6	
9.2	27.2	9.2	K	8.8	11 11.4	50.8		9.3	39 9.6	1.6		8.5	12.1	51.4	K	9.5	58.6	2.8	
9.3	48.7	1.8	K	8.5	30.0	38.4	K	8.3	10.8	39.5		8 1	4 3.6	17.1	K	9.0	33 25.8	28.2	B
8.0	53.9	25.5	B	9.5	12 2.8	52.8		9.5	38.3	14.0		6.7	26.8	29.9	K	9.0	44.1	54.9	K
9.4	43 6.3	9.4		9.2	13 16.4	5.8		9.5	40 36.4	20.8		9.1	36.2	24.2	B	9.4	56.4	19.4	
9.5	13.4	29.8		9.5	29.6	45.0		9.4	41.5	24.3		9.4	5 41.9	38.3		9.3	34 55.5	18.1	
9.5	36.0	9.1		8.7	14 16.2	53.4	L	9.3	46.4	7.2		9.1	50.8	1.3	K	9.3	35 5.9	41.7	
9 3	44 40.4	52.8		9.0	15 0.0	11.2		8.4	48.5	14 0	K	9.0	6 19.8	40.6	K	9.3	10.0	24.2	
9.5	54.9	46.4		9.0	6.9	26.4		8.8	41 9.9	45.7		9.5	7 5.5	4.8		7.3	17.8	27.4	K
8.5	46 29 2	16.7	L	9.0	21.4	51.5	L	9.3	24.0	24.3		6.5	7.6	37.4	K	8.8	19.6	28.5	K
9.5	50.3	31.2		8.0	21.8	44.6	L	8.0	24.1	57.6	K	8.8	49.5	26.5		9.4	32.3	1.4	
7.5	47 18.4	18.1	K	9.5	25.0	19.8		9.5	42 22.4	22.6		8.8	8 10.8	10.7	K	9.5	45.4	8.3	
6.8	29.7	46.3	K	8.8	52.0	33.6	K	7.0	43 9.4	55.5	K	9.1	20.9	55.8		7.6	36 24.1	34.4	K
8.1	48 2.7	2.3	K	8.7	16 38.5	10.9	K	9.0	27.3	23.6		6.8	9 0.5	6.1	K	9.5	37 2.5	51.5	
9.3	32.4	30.1		8.8	17 9.0	38.4	K	9.3	36.7	39.5		7.8	2.9	12.6	K	9.0	5.8	51.3	B
9.0	33.5	49.8		9.5	47.2	16.0		9.3	47.4	7.7		9.3	50.4	36.5		6.8	39 10.0	2.2	K
9.0	39.9	9.8	K	9.5	18 19.3	37.7		9 2	50.9	58.9		9.5	59.8	14.3		9.2	34.7	17.9	B
9.5	49 22.2	57.6		9.0	35.4	43.5		9.3	44 6.2	13.2		9.5	10 32.9	41.7		9.3	40 56.3	24.6	
9.1	57.6	55.6	K	9.5	19 3.0	12.9		7.2	8 4	24.6	K	9.4	11 20.1	2.3		8.2	42 5.3	4.1	K
9.4	50 35.9	50.8		9.5	26.4	51.3		9.5	45 55.1	26.0		9.5	41.4	24.6		9.2	23.1	43.0	R
8.0	43.3	43.9	K	9.3	20 5.0	17.4		8.5	46 6.6	25.7	K	9.5	13 50.9	46.1		9.3	24.3	50.7	
8.9	57.7	54.0	K	9.0	28.3	38.4	K	9.3	22.9	26.2	B	9.2	14 35.8	25.8	K	7.8	32.6	8.9	K
9.3	51 4.6	5.1		9.0	59.0	27.0		9.5	28.0	54.5		9.0	15 36.8	40.2	R	9.4	44 8.3	35.3	B
9.3	56.9	55.2		9.4	21 32.9	34.0		9.5	47 32.5	23.6		9.5	16 27.1	56.5		9.4	11.3	31.0	
9.3	53 47.3	21.2	K	9.2	40.5	35.3		9.5	40.6	43.2		9.4	48.2	9.5	R	9.1	45 26.2	56.8	K
9.0	54 3.5	0.5		9.0	45.6	28.8		9.5	48 7.9	33.6		9 0	17 23.9	37.5	K	8.9	46 4.8	16.3	K
9.2	23.5	58.4		9.5	22 37.1	2.5		9.0	40.6	26.7		9.4	30.1	59.9		9.1	5.6	12.2	K
9.0	24.2	51.3	K	9.5	24 28.5	31.0	B	8.8	42 0	15.3		9.5	39.9	58.0		9.5	23.4	51.3	
9.0	57 34.5	42.6	K	9.5	31.9	11.9		9.5	53.7	47.4		9.5	18 37.8	5.0		9.5	27.8	44.4	
9.5	36.9	4.2		9.3	59.9	3.7		9.3	49 7.6	23.9	B	8.8	43.1	45.4	K	9.3	53.9	5.3	
9.4	48.3	24.6		7.3	25 22.8	13.3	K	9.5	50 49.4	34.7		9.5	19 41.8	1.7		9.5	47 21.4	34.4	
9.5	0 41.5	4.9	B	9.5	49.7	27.4		9.2	57.8	20.3	K	9.5	57.2	5.3		9.5	46.1	36.0	
9.4	1 5.5	2.4		9.1	26 27.0	3.7		9.3	52 2.0	45 5		8.6	59 6	59.0		9.4	48.1	55.1	
9.3	15.1	45.7		9.5	27 20.6	47.8		9.1	3.8	8.5		9.4	20 1.0	51.3	B	9.5	48 18.4	5.7	
8.7	27.3	41.2	K	9.5	31.0	34.3		9.4	8.3	53.4		9.5	21 9	56.3		9.4	30.4	10.9	
9.0	51.0	43.9	K	9.3	36.9	8.5		9.2	35.4	31.0	K	9.4	22.7	51.4	B	9.5	43.8	16.8	
6.8	51.9	2.1	L	8.8	28 17.3	37.4	K	8.0	53 3.5	43.7	K	8.6	33.3	13.2	K	9.3	49 16.8	23.0	
9.0	58.9	29.5		8.8	25.6	29.0	K	9.1	28.6	23.0	K	9.5	22 3.8	55.1	B	9.4	36.4	16.4	
9.3	2 12.3	9.8		9.3	40.8	10 8		9.0	54 37.9	20.3	B	9.5	10.0	28.2		6.8	50 11.1	34.0	K
9.5	35.4	3.7		9.0	49.1	49.0		9.5	57.6	49.4		9.3	42.8	33.0		9.4	51 54.8	45.1	
8.5	55.2	45.2	B	8.8	54.4	39.8	K	9.5	55 3.7	1.9	B	9.4	44.7	51.4		9.4	53 13.4	34.7	
9.4	3 14.0	59.2		9.0	29 9.8	9.4		9.5	4.8	55.2		8.8	51.8	4.7	K	8.8	54 27.1	12.6	K
9.0	4 26.9	40.9		8.2	35.6	53.8	K	9.5	27.3	28.2		9.5	24 8.3	0.6		9 3	55 6.3	10.8	B
9.0	31.0	45.0	K	9.5	40.7	30.8		9.3	50.4	15.1		9.5	29.1	59.0		9.5	23.5	5.0	
4.6	5 54.1	48.5	K	8.8	30 0.0	43.2		9.3	55.3	7.9		9.2	25 13.7	47.4		9.4	25.7	12.0	
9.5	6 30.7	39.0		9 0	31 12.7	41.6		9.5	56 6.9	18.2		8.7	21.2	50.6	B	9.2	38.9	27.8	K
9.5	41.2	6.2		9.1	40.9	33.6		9.5	12.5	56.0		9.3	59.8	5.4		9.5	56 9.8	46.2	

401—460				461—520				521—580				581—640				641—700			
	2ᵘ—3ᵘ		+23°		3ᵘ		+23°		3ᵘ		+23°		3ᵘ—4ᵘ		+23°		4ᵘ		+23°	
m		′	″	′		m		′	″	′		m		′	″	′		m		′	
8.7	56	45	7	3.1	K	9.2	22	24	7	44.1		9.5	37	42	5	2.0		9.5	45	44	8	56.6		9.5	3	45	5	14.3	
9.5	57	39	0	25.2		8.1	23	11	1	8.4	K	4.5		43	4	29.4	h	9.5		48	3	8.2		7.5		46	7	12.7	K
8.3		53	6	42.1		7.8		30	0	9.3	K	8.0		50	3	47.9	h	9.5	46	15	4	45.2		9.5		50	7	30.6	
8.5	58	4	2	39.1		9.1		56	9	59.1	B	8.4		59	0	9.7	R	9.1		23	7	30.2	R	9.5		56	1	58.4	
9.1		15	6	39.5		9.1	24	17	7	12.8	K	9.5		59	7	20.2		9.5		35	4	2.7		8.0	4	7	8	8.4	K
9.5	59	25	0	12.4		9.2		50	1	0.3	K	9.1	38	1	0	39.0	h	9.0	47	10	0	23 3		9.5		53	6	36.1	
7.8		27	0	6.6	K	9.1	25	10	9	20.5	R	9.5		19	5	8.1		9.4		16	7	55.5		9.3	5	27	4	20.7	
9.3		43	3	11.0		9.1		17	2	3.1		8.5		27	7	32.7	h	9.3		24	0	55.3		7.0		46	7	20.5	K
8.8		47	3	46.0		7.8		18	7	20.5	K	9.2		31	2	49.5		8.6	48	1	4	10.4	K	8.0		52	2	13.0	R
9.5	0	40	9	19.1	B	7.8		19	1	45.0		9.0		34	1	19.7	h	9.5		26	0	46.1		9.0		54	2	1.1	K
9.5		44	1	21.1		8.8		30	0	48.8		8.5		40	0	40.4	h	9.5		55	4	58.6		9.4	6	1	1	19.2	
9.5		47	3	49.6	B	9.0		32	6	50.5		9.5		40	7	27.6		9.3	49	3	0	18.8		8.9		23	9	57.0	
8.9	1	51	1	38.9	B	6.2		53	2	59.2	R	9.5		41	0	21.9	h	9.4		24	7	14.3		9.4		38	9	20.6	
8.9		55	9	38.2		9.0	26	1	4	21.1	K	8.0		42	0	41.2	h	7.3		41	7	39.9	K	8.7		41	3	44.2	K
9.5	2	2	8	10.9		9.5		13	0	29.1		7.9		42	5	15.7	h	9.5		51	9	4.0		9.5		57	7	23.0	
9.3		29	7	12.8		9.1		18	0	36.4		8.0		45	1	39.2	h	9.5		54	2	56.0		9.2		59	1	49.2	B
8.8	3	15	3	26.9	K	8.5		25	9	2.1	K	7.5		45	3	20.9	h	9.2		56	2	29.5		9.5	7	7	9	23.8	
9.3		55	0	20.7		9.5		39	8	48.6		7.5		48	2	27.8	h	9.3		57	7	27.4	R	9.1		9	8	8.7	K
9.2	4	2	7	43.4		8.8	27	27	7	27.1	K	8.0		52	0	14.8	h	9.5		58	5	7.3		9.4		39	0	28.5	B
8.9		7	6	38.4	B	9.3		30	1	49 6		7.0		52	3	50.8	h	8.0	50	26	7	12.4	K	9.5		39	2	39.0	
9.3		25	0	44.2		8.8		54	7	18.5	K	3.2		52	9	39.3	h	9.5	51	42	1	7.1	B	9.5		58	3	16.9	
9.2	5	7	6	13.1	B	8.5		56	0	26.4	K	8.2	39	0	5	8.8	h	9.4	52	1	3	1.8		9.1	8	27	4	46.6	
8.1		32	1	43.1	B	8.0	29	9	7	48.0	K	9.5		3	8	32.9	B	9.5		19	0	44.3		9.4		43	7	2.0	
9.0	7	9	0	4.0	K	9.5	30	22	4	43.9		9.0		7	6	5.5	B	9.5		21	7	42.6		9.5		56	0	5.9	
8.6		36	9	49.6	K	9.4		34	7	53.1		9.4		16	1	29.5		8.9		27	2	3.3	K	9.5	9	43	9	12 0	
9.5	8	8	0	45.6		9.4		35	8	59.0		9.5		18	3	0.5		9.2	55	5	3	59.9	K	9.5	10	8	2	26.3	
8.7		9	1	13.4	B	9.5	31	6	··	49.6		9.5		19	8	38.7		9.3		6	0	14.2		9.5		12	6	20.0	
9.1		11	0	1.5		9.3	32	20	4	59.2		9.2		29	7	41.2	R	9.5		28	4	19.1		7.8		22	7	41.1	K
8.6		35	7	29.7	K	9.0		49	8	1.7	R	8.5		34	9	52.1	h	6.0		41	7	42.6	K	9.5		25	0	47.6	
8.9		39	4	3.0		9.5		51	7	14.9		9.5		41	0	26.6		9.5	56	6	0	13.6		9.5		30	7	28.8	
9.3	9	8	3	22.0		9.2		55	7	19.4	R	9.4		41	2	11.0		8.7		12	1	5.9	K	9.2		54	2	44.5	
9.5		15	2	23.0		9.5	34	10	4	48.0		9.5		49	0	36.3		9.5		34	4	35.0		7.5	11	4	9	23.9	K
9.4		21	1	29.5	B	9.3		21	0	24.2		7.8		52	3	54.0	h	7.8		36	3	22.9	K	9.0		10	6	25.5	K
9.5		43	0	39 1		9.2		40	0	15.5	B	9.0		57	2	43.6		9.5	57	7	2	51.2		9.5		18	1	30.7	
8.8		49	0	48.0		8.3	35	6	5	54.9	K	9.4	40	10	4	4.6		9.5		8	7	11.6		7.5		23	5	13.8	K
7.0		50	7	33.5	K	8.4		7	4	12.1	K	7.0		20	6	24.6	h	9.4		56	0	17.0		9.4	12	31	9	22.1	
9.0	10	19	6	18.1	K	9.3		9	1	8.7	R	4.0		33	8	36.1	h	8.7		58	6	7.0	K	9.5		48	7	12.5	
9.0		21	3	31.4	K	9.5		18	7	47.5		6.2		36	3	41.6	h	9.5	58	12	0	43.9		9.5	14	8	2	22.1	
9.5		22	3	26 3		9.3		22	5	25.1	R	8.4		36	5	26.6	h	9.5		19	8	44.2		9.5		29	1	27 8	B
9.4	11	21	9	41.9		9.5		33	8	56.5		8.0		39	2	57.1	h	9.5	59	12	6	56.1	B	9.5		37	2	9.8	
8.9		22	3	32.2	B	9.5		36	3	34.2		7.5		44	4	56.1	h	8.8		45	4	0.0		9.5		54	1	51.1	
7.0		49	6	9.9	K	9.5		37	8	38.6		7.8		48	3	48.2	h	9.2		56	0	23.6		9.3	15	5	3	37.6	
9.0		51	3	59.7	B	9.1		45	5	40.2	K	7.2	41	7	9	16.0	h	9.5	0	10	7	20.6		8.5		13	6	57.7	K
9.5	13	23	0	52.5		8.7		48	8	55.9	K	9.2		8	0	48.3	h	7.2		11	7	31.7	K	6.5		15	7	57.6	K
9.3		51	6	45.6		6.5	36	12	2	50.0	h	8.5		17	4	46.5	h	9.3		12	3	50.3		9.1		15	9	53.8	B
9.5		53	3	15.5		9.4		13	0	7.6	h	9.4		17	8	5.3		9.5		52	6	44.5		9.5	16	19	9	30.5	
9.5	14	20	5	5.3		4.7		16	6	39.1	h	7.9		18	6	54.2	h	7.5	1	2	5	41.4	K	9.5		36	5	27.5	B
9.4		36	0	40.4		8.9		28	8	48.5	K	9.4		21	0	30.5		9.5		10	7	5.2		8.6		37	5	27.4	K
9.2		42	0	40.7		8.6		30	1	15.0	R	7.5		21	8	24.1	h	9.3		18	7	43.2		9.4		44	4	24.0	B
9.5		52	6	33.2		8.2		50	0	34.6	h	7.3	42	16	3	31.2	h	9.3		24	5	43.9		9.1		53	5	16.4	
9.4	15	31	6	24.2		9.0		58	5	37.5	h	9.5		25	2	27.7		9.5		29	5	46.2		9.5		55	7	48.0	
9.4		58	9	24.4		8.1	37	0	5	52.8	h	9.4		39	6	10.6	B	7.5		35	7	34.9	K	9.0	17	8	4	14.2	K
9.2	16	17	3	21.7	B	9.0		2	1	49.8	h	9.5	43	16	7	29.1		9.4	2	36	1	37.3	B	9.3	18	8	5	13.0	
9.2	17	11	6	11.5	B	9.5		3	4	58.0		9.2		30	7	8.4		9.5	3	14	0	13.5		9.4		28	6	7.2	
9.5	19	11	4	17.4		9.5		11	4	57.6		9.5		38	7	57.7		9.2		14	7	15.0		8.7		29	4	10.2	K
8.0		17	5	40.9	K	4.8		11	8	54.7	h	9.5	44	25	7	49.5		9.3		26	2	36.2		9.5		40	3	50.4	B
9.2	20	51	1	7.2	K	8.2		14	9	34.9	h	9.3		33	0	26.7		9.5		27	0	19.0		9.5	19	22	2	38.1	
9.5	21	12	7	33.7		9.5		32	4	36.5		9.5		44	3	3.1		9.5		32	9	39.6		8.8		35	9	47.9	K
8.0		33	2	41.3	K	8.0		37	7	44.3	h	9.5	45	29	5	56.0		9.2		38	8	21.2	B	9.2		41	5	46.6	
9.1		39	4	57.9	K	8.1		39	5	43.8	h	9.5		44	1	39.5		9.4		42	5	12.5		9.4	20	55	6	1.1	B

701—760				761—820				821—880				881—940				941—1000			
	4ᵘ		+23°		4ᵘ		+23°		4ᵘ—5ᵘ		+23°		5ᵘ		+23°		5ᵘ		+23°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.0	21	40.8	16.5	K	7.9	45	27.1	45.5	K	9.0	54	51.8	26.3	B	8.8	6	25.3	38.8	K	9.5	24	37.8	52.8	
7.4	22	31.8	2.0	K	9.3		29.4	44.3	B	9.0	55	1.6	34.0	K	9.5	7	8.1	58.2		8.7		44.8	13.7	K
9.5		43.5	22.7		8.3		50.5	41.7	K	9.5		2.9	43.8		9.3		9.9	1.7		9.5		45.3	29.3	
9.5	23	39.6	12.7		9.5		57.0	51.5		8.4		2.9	52.6	K	9.5		32.9	46.8		9.4		48.8	3.6	
8.0	24	43.2	58.3	K	9.3	46	20.4	9.1		9.5		21.0	10.7		8.9		51.5	56.3	K	9.5		59.9	2.1	
9.5		53.7	20.4		9.0		32.6	25.8		9.3		30.9	32.8		9.5	8	13.4	12.8		9.5	25	1.0	17.4	
9.3	25	1.1	12.0		9.1		33.7	38.9	K	9.5		32.9	7.2		9.5		40.1	59.6		9.4		24.6	26.0	B
9.5		23.5	0.5		9.5		44.6	44.5		8.0		35.7	19.0	K	6.8		42.9	52.1	K	9.5		36.4	22.5	
9.5		37.8	8.2		9.5	47	5.8	15.7		9.1		36.7	58.7		9.5	9	10.7	41.5		9.5		57.3	29.5	
8.8	26	3.5	55.7	K	9.0		20.9	45.8	K	8.5		48.0	26.8	K	9.3		24.7	58.5		9.2	26	26.9	57.1	B
9.3		55.2	19.1		9.5		39.7	15.3		9.5		54.0	38.2		9.5	10	3.8	13.5		8.8		30.9	24.6	B
9.2	27	14.6	31.3		8.0		51.5	5.6	K	9.5		57.5	54.2		9.5		8.7	53.9		9.3		33.6	21.1	
9.2		16.8	25.8		9.5	48	8.2	55.6		8.5	56	0.8	42.7	K	9.0		43.8	16.1		9.5		35.8	29.5	
9.5		44.7	40.0		9.5		16.9	10.5		9.4		4.0	33.6		9.5	11	7.7	4.9		5.9		35.8	56.5	K
6.5		46.0	2.9	K	9.5		39.1	10.9		8.9		5.6	20.5	K	9.3		14.1	58.6		9.5		41.8	11.1	
9.4	28	2.3	55.0		9.5		44.1	49.5		9.5		20.9	15.5		9.3		34.9	1.5		9.5		58.9	48.0	
9.2		52.7	29.7		6.2	49	3.0	44.5	K	8.0		26.0	36.5	K	9.5		35.9	37.6		9.2	27	9.4	50.2	
9.3	29	1.3	46.0		9.5		8.4	24.2		9.5		32.2	52.8		9.2		41.6	8.4	K	9.5		15.8	44.1	
9.5		28.0	31.0		9.5		13.9	28.9		9.2		49.8	18.0		8.4		43.0	57.7	K	9.4		31.8	30.0	
9.5	30	43.7	43.5		9.5		16.2	20.1		9.5	57	3.0	39.7		9.1		50.9	35.1		9.5		50.8	55.9	
9.5	31	8.5	42.5		9.4		50.0	41.7		9.5		21.0	53.1		9.5		53.9	17.7		8.9	28	2.5	20.1	
9.0		20.6	0.8	K	8.4	50	4.1	37.5	K	9.4		37.4	17.8		8.2	12	4.8	53.2	K	9.2		6.1	4.3	R
8.7	32	4.9	31.7	K	9.5		12.2	23.0		9.5		51.9	49.6		9.5		53.0	51.2		9.5		8.0	21.1	
8.9		14.5	39.3	K	8.5		45.1	32.3	K	9.2	58	8.5	49.6		9.3		59.9	8.5		9.0		12.7	31.5	
9.5		38.7	51.9		9.3		46.0	15.7		9.4		14.5	47.6		9.5	13	58.7	32.7		9.3		13.7	11.4	
9.5		57.7	14.5		9.4		50.3	58.1		9.5		18.4	23.0		9.5	14	18.4	14.5		9.5		15.5	4.4	
9.5	33	5.6	16.8		8.9	51	7.0	57.8		9.5		27.1	45.5		9.4		46.3	23.8		9.2		24.3	7.9	B
9.5		16.2	6.9		9.1		28.5	41.7		9.5		29.2	17.5		9.5	15	35.3	1.2		9.3		24.3	8.8	
7.3		18.9	44.6	K	8.0		34.9	56.6	K	9.5		45.6	34.4		8.8		56.8	27.7		9.0		30.5	28.6	
9.4		30.5	22.1		9.5		36.0	14.3		9.1		50.8	6.1		9.5		57.9	48.6		9.3		34.5	12.6	
9.5		39.2	8.9		9.0		48.6	37.2		9.2		56.9	54.3		8.9		59.3	58.4	K	9.4		40.4	40.9	
9.4	34	9.3	33.9		9.1		54.4	46.9		9.5		58.6	29.1		9.5	16	3.7	57.6		9.4		42.0	8.2	
6.8		28.8	49.7	K	9.5	52	3.0	40.6		9.4	59	30.5	40.5		9.4	17	5.8	37.6		8.8		48.8	2.9	K
9.5		35.6	55.7		9.5		4.3	6.8	B	9.1		30.6	5.1	K	8.9		26.3	58.3	K	8.8		50.8	3.4	K
9.5	35	11.2	4.7		9.3		17.7	13.5		8.8		35.9	3.1	K	9.5		37.9	41.1		9.5		54.6	17.0	
9.2		26.1	20.9	K	8.1		21.8	13.1	K	9.5		37.2	18.6		7.8	19	6.8	10.1	K	9.5	29	0.7	15.1	
9.5		30.2	40.3		9.4		24.0	23.1		9.5	0	8.6	56.4		9.5		9.5	23.7		9.1		30.6	53.4	
8.3		35.1	48.0	K	8.8		38.1	34.0	K	9.1		18.3	27.4	K	9.5		35.2	59.6		9.1		39.8	37.0	
7.0	36	59.0	22.2	K	9.1		56.5	28.8		9.5		20.2	43.7	B	9.5		49.8	9.2		9.5		50.9	21.1	
9.2	37	12.5	38.9		9.5		58.0	54.8		9.5		21.2	42.2		8.4		57.6	50.1		9.5	30	6.5	41.5	
8.4		36.5	25.7	K	9.5	53	7.0	56.2		9.5		35.3	40.3		9.3	20	21.2	34.2		8.5		21.0	12.1	K
9.1	38	0.9	4.2	K	9.5		20.6	18.5		9.5		49.4	22.9		8.0	21	13.6	38.4	K	7.8		26.1	13.8	K
9.4	39	26.7	29.6	R	9.5		22.1	35.5		9.0		53.8	5.3	K	9.5		24.0	55.5		9.5		30.8	23.4	
9.5	40	16.1	4.1		8.5		27.1	48.6	K	9.5		58.4	58.0		9.5		28.8	43.8		9.1		42 9	1.3	
9.5		22.0	5.4		9.3		40.5	37.9		9.5	1	3.5	44.8		9.1		40.7	31.6	B	9.3		45.8	30.3	
9.5		42.9	15.1		8.9		45.4	39.6	K	9.5		9.8	51.8		9.0	22	16.9	5.9	R	9.1		59.1	36.5	
8.5	41	3.0	8.6	K	9.1		46.1	42.0	K	9.5		15.6	54.8		9.3		28.6	53.3	K	8.9	31	3.8	7.6	
9.1	42	11.2	52.7		8.4		51.9	54.9	K	9.5		15.6	56.8		9.5		32.5	10.2		8.5		4.3	36.3	K
9.5		58.1	16.0		9.2	54	2.7	17.2		9.5		37.8	29.1		9.5		50.0	20.3		9.2		20.9	54.8	
8.2	43	6.9	6.3	K	9.1		3.8	1.3		9.0		39.7	57.6		9.3		59.1	44.3		9.4		26.0	16.8	
9.5		20.5	47.9	B	9.2		13.9	13.1	B	9.4		45.0	2.4	B	9.5	23	12.9	23.7		9.2		26.9	18.8	K
8.8		35.1	31.3	K	9.1		19.5	25.6	B	8.8	2	13.5	2.0	K	9.5		18.4	13.6		9.5		39.8	54.6	
9.5		58.6	10.1		9.5		26.5	55.4		9.4		42.8	56.5		9.5		26.0	7.4		9.5		42.8	11.4	
9.5	44	6.7	15.8		9.2		27.5	26.6		9.5	3	13.9	35.0		9.4		32 8	38.7		9.2		43.6	53.9	
9.4		14.7	14.6	B	8.7		29.6	36.5	K	9.4		50.3	43.1		9.5		37.5	57.5		9.5		48.4	16.2	
7.7		34.0	56.9	K	9.5		41.2	8.8		9.2	4	42.3	50.3		8.9		45.8	16.8		9.5		48.9	36.9	
6.5		50.9	5.4	R	9.3		45.4	27.8		9.5	5	0.5	44.5		9.4	24	5.8	18.4		9.5		54.9	44.5	
7.4		58.9	20.6	L	9.5		48.8	54.7		9.5		50.0	49.1		7.8		17.1	1.8	K	9.4		56.3	26.5	
9.5	45	25.9	58.8		9.4		50.4	30.9		9.0	6	6.7	46.6		9.2		24.0	6.9		9.4	32	1.4	17.1	
9.5		26.0	6.4	B	9.3		50.4	25.7		9.0		19.3	36.8		9.5		35.6	13.3		9.5		13.0	54.6	

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	5h	+23°			5h	+23°			5h	+23°			5h—6h	+23°			6h	+23°	
m				m				m				m				m			
9.1	32 18.6	25.8		9.5	39 53.4	57.6		9.5	48 38.8	4.6		9.3	56 36.2	12.5		9.5	3 2.9	2.4	
9.5	25.8	45.8		9.5	40 8.8	49.8		8.6	41.5	7.3	K	9.5	41.0	42.3		8.5	3.8	28.2	
9.2	30.4	16.2		9.5	16.9	6.6		9.5	45.9	40.4		9.0	42.8	0.7		7.3	7.5	14.1	K
9.5	32.5	53.0		9.4	17.2	42.1		9.2	48.0	31.3		9.5	42.9	32.3		9.5	11.0	58.0	
8.6	50.1	23.7		9.5	18.0	49.8		9.3	48.5	40.4		9.5	50.7	2.9		9.5	30.6	52.6	
9.4	33 1.9	20.6		9.3	19.9	11.0	R	9.5	56.7	6.0		9.5	57 2.2	51.4		9.3	57.2	46.5	
6.8	6.9	14.5	K	9.5	27.5	38.8		9.5	49 6.9	59.2		8.5	12.5	31.1	K	9.0	4 0.0	4.3	K
9.5	33.2	5.3		9.5	27.5	45.6		9.0	31.4	32.5		8.4	36.2	11.5	K	9.5	4.6	38.3	
9.4	40.7	50.0		9.0	30.4	34.0	R	9.5	35.0	56.5		9.4	40.2	18.3	B	9.4	12.7	35.3	B
9.4	43.8	36.7		9.1	33.0	52.5	R	7.5	36.9	7.8	R	9.4	42.0	47.4		9.2	16.3	53.1	
9.4	43.9	16.7		9.5	40.9	24.4		9.3	40.8	44.8		9.5	51.1	2.2		9.2	36.6	40.0	
9.5	48.8	11.3		9.0	52.8	38.9		7.8	47.5	38.4	R	7.2	58.4	38.5	L	9.2	39.3	9.2	
9.5	34 12.2	30.8		9.5	41 4.0	25.1		9.5	53.0	51.8		9.5	58 4.6	44.5		9.0	40.4	0.1	
8.7	17.6	39.5		9.4	11.9	37.0		9.2	55.0	49.8	B	9.5	5.3	29.9		8.7	49.4	46.5	K
6.3	31.1	7.9	K	9.5	17.6	43.3		7.9	57.6	13.4	R	9.5	6.9	56.1		9.5	54.8	30.6	
9.5	42.7	33.9		9.5	37.2	36.5		9.3	59 25.5	38.4		9.5	9.9	27.9	B	9.5	58.0	1.1	
9.5	45.5	58.2		8.7	43.3	25.9	R	9.3	28.4	48.2		9.4	12.9	12.1		9.5	5 6.7	1.6	B
9.3	53.2	40.3		9.4	44.3	5.9		9.5	36.2	42.5		9.4	18.7	33.1		8.1	17.5	59.2	K
9.2	56.4	2.9		9.5	54.1	28.6		9.5	42.9	9.5		8.6	19.1	3.9	K	9.5	27.3	7.4	
9.5	35 6.8	29.1		9.3	42 15.7	6.6		9.5	48.8	11.3		9.3	25.3	1.3		9.5	51.7	33.8	
9.0	26.9	0.8		9.5	16.2	25.9		9.5	51 4.5	21.7		9.5	36.8	32.2		9.2	52.4	47.5	
9.5	29.1	32.5		9.1	20.8	49.6	R	9.5	10.8	53.6		9.5	39.4	58.2		9.0	54.9	24.4	K
9.5	31.9	9.3		8.8	26.3	52.8	K	9.5	23.3	23.7		8.5	43.0	45.1		9.1	56.2	57.0	
9.4	33.7	58.4		9.5	28.8	51.1		9.3	43.2	15.1	B	9.2	56.5	29.4	K	9.5	57.0	19.2	
9.2	45.8	6.3		8.2	51.0	11.0	R	9.5	52 4.8	18.7	R	9.5	59 2.0	17.1	R	9.0	6 10.1	17.0	K
8.9	36 0.8	4.5		9.5	54.1	49.5		9.5	5.4	33.8		9.0	6.1	40.7	R	9.5	15.7	36.5	
9.5	4.8	20.1		7.3	43 1.5	20.2	K	9.5	15.6	54.3	B	9.5	13.9	31.0		9.3	35.1	15.1	
9.5	9.0	0.1		9.3	26.7	52.1		8.5	16.8	19.0	L	8.2	14.4	45.6	L	9.5	43.2	56 8	
9.3	10.7	26.8		9.3	29.8	58.3		7.8	18.9	17.0	L	8.5	19.3	52.5	L	9.2	50.3	53.8	
8.8	32.8	19.4	K	9.4	44 3.0	56.2		7.6	39.0	41.4	K	8.8	24.7	27.7	K	9.0	7 9.4	49.8	
9.2	32.8	50.9		8.8	6.1	34.0	R	9.1	39.8	7.6		9.4	25.3	6.0		8.3	17.2	14.0	K
9.3	34.0	26.1		9.5	9.1	57.5		8.4	41.3	43.5	K	8.5	28.9	31.7	K	9.5	22.7	35.0	
9.5	40.6	55.7		9.4	11.8	41.0		9.5	56.6	38.7		9.2	31.0	55.7		9.3	26.4	39.1	R
9.2	57.0	40.9	K	9.5	16.4	17.2		8.9	58.9	7.5	K	9.1	34.6	5.7		9.5	32.2	58.4	
9.5	37 7.1	54.9		9.4	17.3	38.7		9.1	53 4.6	28.7		9.3	36.8	0.9	K	6.8	8 8.4	47.8	L
7.8	7.9	40.9	K	9.5	24.3	4.9		9.0	17.3	54 9	K	8.5	37.5	23.2	K	9.5	12.3	1.2	
9.5	17.7	44.6		9.5	32.7	32.6		9.3	18.4	35.5		9.2	41.8	42.0		9.5	32.1	1.2	
9.5	19.8	12.7		9.5	40.8	10.8		9.5	43.2	0.3		9.4	58.0	24.3		9.5	41.4	50.3	
8.7	28.9	0.8	K	9.0	46.4	17.0		9.5	48.4	12 3		8.7	59.4	0.1	K	9.5	44.5	44.6	
9.2	33.6	15.4		8.6	51.2	13.0		9.5	50.6	21.0		9.5	0 2.4	30.4		9.5	9. 0.7	58.9	
9.5	42.4	26.0		9.5	51.8	24.6		8.5	54 1.7	19.7	R	9.3	14.2	13.0		9.5	2.0	21.4	
8.5	38 24.3	6.5	K	9.5	45 1.9	41.7		9.5	14.2	54.6		9.1	17.0	58.5		8.7	4.5	55.7	K
8.3	37.0	49.6		9.1	21.7	56.0	R	9.5	25.2	36.8		8.9	21.1	54.5		9.5	18.4	49.8	
9.5	44.5	10.2		9.4	58.2	43.6		9.5	31.7	56.4		9.3	48.3	51.0		9.3	26.0	20.9	
9.1	46.2	34.9		9.5	46 10.8	28.5		9.5	32.6	27.2		9.4	49.3	53.2		8.7	31.3	52.4	K
8.8	54.9	35.5		9.3	19.6	23.1		9.5	34.0	2.7		6.5	57.3	7.5	K	9.1	35.6	37.3	K
9.1	56.7	51.3		9.5	50.8	6.1		9.5	36.1	48.2		9.3	1 9.3	54.7		9.3	38.4	0.7	
9.5	59.8	55.5		8.7	55.4	15.0		9.2	43.6	19.5		9.5	28.7	34.8		9.4	44.7	57.1	
9.4	39 5.6	11.5		9.2	56.7	56.3	R	9.1	55 16.1	49.4		9.5	32.2	8.9	B	8.6	52.1	3.6	K
9.5	7.8	21.1		8.8	47 4.8	54.3	R	5.1	17.8	15.6	K	9.2	33.3	6.3	K	9.5	55.6	12.3	
9.5	11.4	49.0		8.9	8.7	50.8	R	9.2	36.0	35.6		9.2	41.3	48.3		9.3	57.3	52.3	
9.2	18.1	18.7	R	9.5	13.7	7.9		9.0	45.4	23.2		7.4	42.3	1.4	K	9.3	10 2.3	53.3	
9.5	21.0	4.6	R	8.9	30.8	42.9	K	9.4	51.8	15.6		9.5	2 1.0	10.6		7.0	4.4	39.3	B
9.5	24.8	38.2		9.5	37.9	48.3		9.3	56 0.0	56.3		8.9	4.8	50.2		9.4	6.6	9.8	
9.3	29.6	36.4	B	9.5	48.8	12.5		9.5	4.2	44.0		9.4	6.9	55.0		9.2	7.9	25.6	
9.4	37.3	36.1		9.5	54.0	31.0		9.5	5.0	19.0		9.4	39.3	15.4		9.4	9.0	19.6	
9.5	38.0	39.0		9.3	48 0.0	4.9		9.4	10.1	28.5		9.5	40.4	2.4		8.1	12.3	3.3	K
9.5	41.5	38.6		9.2	21.6	36.7		9.5	16.9	51.6		9.5	49.9	3.4		8.5	21.9	1.4	K
8.8	43.8	49.4	K	8.5	25.4	23.6		9.5	17.7	23.7	B	9.5	55.1	42.2		9.3	24.2	57.5	
8.4	48.7	43.7	K	9.0	26.2	11.3	R	9.5	19.3	50.0		9.4	57.5	3.6		7.3	29.8	31.2	K

1301—1360					1361—1420				1421—1480				1481—1540				1541—1600			
	6ª		+23°			6ª		+23°		6ª		+23°		6ª		+23°		6ª		+23°	
m	′	″	′		m	′	″	′	m	′	″	′	m	″	′	′	m	′	″	′	
7.5	10	33.0	19.3	L	9.5	19	8.5	42.8	9.5	27	30.7	35.1	9.5	35	51.5	43.3	9.4	46	24.8	57.8	
9.4		38.2	59.5		8.2		9.0	45.8	K	9.5		39.8	31.1	9.4	36	1.9	26.5	9.2		50.9	52.7	B
9.3		49.5	5.1		9.5		10.3	1.0		9.5		47.2	57.3	8.8		6.0	22.3	K	9.5		56.0	39.8	
9.4		52.0	20.8		9.5		18.8	30.5		9.5		52.2	43.8	9.4		30.2	50.3	B	9.4	47	2.3	3.4	
9.3		52.6	40.1		9.5		39.9	26.3		7.4		54.9	12.6	B	9.5		31.5	42.8		9.3		9.9	27.7	
9.3		59.3	53.2		9.3		42.3	9.3		9.5	28	30.7	35.9		7.6		33.4	47.5	L	9.1		24.5	42.8	
9.3	11	4.0	19.9		9.4		46.5	57.6		9.5		33.5	54.5		9.4		41.2	34.5		9.4		25.4	7.7	
9.5		6.2	47.6		9.5		58.4	40.2		8.7		50.6	37.8		9.4		41.3	53.4		9.5		53.2	26.3	
9.1		9.3	19.6		9.0	20	0.8	30.1		8.7		51.5	45.2	S	8.9		50.8	59.9		9.5	48	7.6	8.4	
9.4		10.0	53.5		9.3		3.9	1.1		9.5		59.9	23.0		9.2		53.3	50.9		8.8		24.5	32.4	
8.2		17.9	27.8	K	8.9		5.3	54.6		9.5	29	1.2	13.9		7.3	37	22.8	30.9	K	9.1		34.3	18.6	B
9.5		32.1	31.2		9.5		13.0	22.0		9.0		2.3	17.6		8.8		28.3	54.9	K	9.1		43.9	23 6	
9.5		35.8	19.3		9.4		24.3	4.7		7.3		4.5	43.3	L	8.4		50.0	58.8	K	9.5		45.7	56.1	
9.5		39.5	40.6		9.5		48.7	58.3		9.2		17.8	12.9		8.2	38	1.4	50.0	K	8.0	49	2.1	4.9	L
9.3		43.0	22.9		9.5	21	2.6	38.3		9.5		54.9	19.4		9.5		20.7	51.4	B	9.5		13.7	56.7	
9.5		55.3	30.2		9.5		14.3	53.0		9.1	30	3.2	11.4		9.5		54.5	46.6		9.4		15.6	22.1	B
9.5	12	15.6	41.6		9.5		18.2	33.8		9.3		10.2	28.6	B	9.5	39	5.3	3.1		9.3		45.9	49.8	
9.4		17.4	47.3		9.5		33.5	27.4		9.1		15.5	45.2		9.5		17.3	53.3		9.5		47.6	22.2	B
9.5		24.9	35.2		9.3		46.4	59.9	B	9.2		17.9	4.7		8.0		31.5	23.5		9.5		52.7	58.3	
9.3		30.6	40.1		8.7		50.6	37.7	K	8.9		32.2	34.0		9.5		38.1	19.3		9.5		55.6	30.3	
9.5		55.2	59.2		9.5		54.3	54.4		9.5		37.0	21.3		9.5		39.3	35.8	B	9.5	50	17.1	4.5	
7.7		58.4	49.8	L	9.2		59.6	40.2	K	9.5		49.9	24.5		9.5	40	3.2	35.9		8.5		40.5	17.3	K
9.5	13	28.2	10.3		9.4	22	0.3	54.1	B	9.3		52.9	25.5		8.8		8.8	53.1		9.5	51	7.7	23.8	
9.5		52.0	43.5		9.5		10.4	47.8		9.2		54.5	45.7		7.6		21.4	21.5	B	9.5		18.2	58.6	
9.5		52.2	12.7		9.5		41.7	35.5		9.5	31	2.3	7.7		9.5		24.8	38.7		9.5		51.2	15.2	
9.5		52.6	17.6		9.5		48.7	32.8		7.8		15.4	48.2	K	9.5		39.2	41.8		8.0		54.8	39.7	K
9.4	14	6.7	35.3		9.5	23	11.3	4.9		9.1		21.5	57.8		9.1	41	6.9	10.7	B	9.3		59.9	56.7	
9.5		8.0	20.9		9.2		24.4	54.7		9.0		26.8	4.9		9.5		21.0	9.4		9.4	52	1.2	8.6	
9.5		10.3	2.2		9.0		52.6	13.1	B	9.4		31.3	38.5		8.5		49.5	49.7	K	9.2		1.9	48.5	K
9.0		24.3	53.8		9.4		54.8	28.5		9.0		34.1	35.8	B	9.5		57.3	25.8		9.3		14.7	15.8	B
9.4		36.8	30.3		9.1		57.0	11.2		8.8		35.4	46.5	K	9.5	42	5.6	7.1		9.4		25.8	4.2	
9.3		41.3	8.0		9.4	24	11.0	22.6		9.5		37.9	32.4		9.5		20.3	35.0		9.4		38.5	38.8	B
9.3		43.4	31.0		9.5		13.3	37.3		9.0		42.4	2.3	K	8.5		34.5	32.0	K	9.5		52.0	42.8	
8.5		44.3	9.2	K	9.5		16.8	29.3		9.2		45.0	20.3		9.3		38.3	2.7	K	8.9	53	18.3	52.6	B
9.0		52.1	56.0		9.3		17.4	27.1		8.7	32	8.8	18.0	K	9.5		45.4	50.9		9.2		22.6	16.5	
9.2	15	12.7	33.2		9.3		24.3	53.5		9.3		12.5	32.4		9.5		55.5	25.2		9.3		45.5	58.9	
9.5		21.3	2.4		9.5		26.4	48.3		9.5		29 4	58.7		9.5	43	2.3	5.5		9.2		47.0	54.4	
8.7		45.8	29.7	K	8.5		39.5	16.8	B	9.5		31.1	4.2		6.5		12.2	47.2	K	9.5		49.7	33.8	
9.5		51.1	7.2		9.0		42.8	30.4	K	9.3		36.5	44.0		9.5		46.6	58.2	B	9.0	54	37.2	23.8	
8.6		53.2	43.6		9.5		51.7	35.6		9.3		50.6	21.2	B	8.9		52.8	11.6		9.2	55	6.4	17.2	
9.5	16	8.4	56.2		9.2		58.8	29.4	K	9.4	33	0.0	33.1		9.5	44	12.7	35.7		9.1		17.5	53.1	B
9.5		8.4	9.9		9.4		59.3	9.9		9.4		22.4	0.0		9.4		13.3	0.7		9.3		19.5	36.8	
9.2		9.9	55.0	B	9.0	25	15.3	9.4	K	9.3		23.8	28.0		8.9		30.5	23.8	B	9.5	56	1.0	47.3	
7.2		28.4	47.4	K	9.5		19.6	41.0		9.5		28.3	51.1		9.5		33.7	11.7		9.5		13.1	5.5	
8.5		33.3	8.2	K	9.5		23.3	51.3		9.4		44.1	15.5		8.9		37.3	18.5		9.5		14.7	59.9	
7.5		43.8	31.2	K	9.4		44.2	56.2		9.5		56.0	2.7		9.4		40.8	46.7		9.5		23.4	56.6	
6.8		44.9	23.8	L	9.0		48.1	18.7		8.2	34	7.0	21.4	K	9.1		52.6	42.9	B	8.9		24.0	54.6	K
9.5	17	7.9	5.5		9.2	26	0.8	29.2	K	9.4		24.5	44.6		9.5		55.8	15.5		9.5		29.0	32.8	
9.5		22.7	25.9		9.5		11.0	6.1		9.5		49.7	34.3		9.2		57.3	3.6		9.0		32.3	23.7	K
9.5		30.6	55.2		9.5		24.0	27.8		9.2		54.7	4.5		9.5		59.5	46.7		9.0		33.3	22.7	K
9.5		36.3	53.5		9.4		25.5	25.9	B	9.5		58.4	6.5		9.5	45	0.5	42.8	B	8.5	57	1.1	29.9	K
9.1		39.4	46.6		9.5		31.1	17.5		9.5		58.7	35.1		9.2		11.6	29.4		9.3		26.3	52.6	
9.5		54.3	2.9		9.5		59.9	25.4		9.3	35	3.0	20.8		9.0		37.2	9.1		9.5		41.8	49.2	
9.1		59.3	6.5	K	9.4	27	5.9	25.2		9.1		5.2	14.4		9.5		51.3	21.0		9.3		49.6	4.9	
9.5	18	5.7	57.9		9.3		8.8	3.7	B	9.3		5.4	27.0		9.4		55.1	4.2	B	9.2		50.8	43.3	
8.5		10.4	48.9	K	9.4		10.6	3.1		9.4		12.8	31.0		9.5	46	0.3	52.9		9.5		51.8	58.8	B
9.3		34.8	47.3	B	9.5		21.7	35.2		9.3		33.3	8.3		9.5		4.1	37.3		8.0	58	0.3	27.8	K
9.5		47.4	3.8		9.4		23.6	3.9	B	9.3		30.9	25.3		9.3		9.5	46.2		9.5		7.5	44.0	
9.5		56.2	14.4		9.5		25.2	36.7		9.5		36.9	22.8		9.5		12.9	19.4		9.5		9.8	7.6	
9.4	19	2.8	32.2		9.3		27.4	47.3		8.5		49.7	34.9	B	9.5		18.5	34.0	B	9.4		24.3	41.9	

6ᵘ—8ᵘ **+23°**

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	6ᵘ—7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ—8ᵘ	+23°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	58 23.8	9.1		9.5	8 56.6	59.8		9.4	19 24.7	42.5		9.1	32 42.6	4.4		9.5	45 57.4	56.0	
8.8	37.3	49.9		9.5	58.0	6.2		9.5	40.5	43.8		8.8	44.6	31.3	K	9.5	58.7	39.8	
8.8	37.8	35.4		9.1	9 3.3	54.4		9.0	46.0	9.9		9.1	44.8	8.2		9.1	46 49.6	0.6	K
9.0	42.0	2.4		9.3	11.5	55.6		9.3	50.7	51.2		9.0	52.6	51.6		9.1	58.0	8.2	
9.0	43.3	10.6	K	9.4	32.7	17.0	B	9.5	55.4	58.8		9.5	53.0	32.6		9.4	47 5.6	18.7	B
9.5	45.8	21.6		9.5	38.7	12.5		9.5	20 8.2	12.6		9.0	55.3	56.8	B	9.2	13.2	42.1	
9.0	50.0	26.4		9.1	42.9	43.7		8.7	9.5	6.9	K	8.5	58.1	25.0	K	9.5	15.8	23.0	
8.5	59 19.3	53.0	K	9.3	59.2	13.1	B	8.3	36.7	5.7	K	9.5	59.4	1.9		9.5	25.3	52.2	
9.5	43.3	5.4		9.4	59.4	10.1		8.7	55.3	21.9	L	8.3	33 2.6	51.1	L	9.5	38.2	5.6	
9.5	44.8	44.3		8.9	10 35.9	58.3	K	8.5	21 21.3	7.7	K	8.8	15.6	22.4	K	9.5	41.5	7.5	
9.3	57.0	59.4		9.5	54.3	32.4		9.5	25.0	57.1		9.5	18.8	37.4		9.3	48 6.2	5.5	
8.7	0 3.8	29.9	K	9.5	11 0.3	46.2		8.9	34.2	6.5	K	7.8	25.1	15.2	K	9.5	14.8	34.6	
9.5	9.0	52.5		9.5	14.0	2.0		9.5	51.8	23.5		9.5	43.0	36.4		9.0	31.0	22.9	
9.0	19.8	45.7		9.1	29.5	54.3		8.6	54.2	15.0	K	9.5	56 6	12.4		9.5	34.7	43.5	
9.5	24.5	12.0		9.2	30.6	51.3		9.4	22 13.2	58.2	B	8.3	34 20.8	36.1		9.5	49 23.8	46.4	
9.5	26.2	57.9		9.3	34.3	59.7		9.1	52.3	11.2		var	21.5	47.3		9.2	24.8	40.1	
8.3	30.0	52.8	K	9.5	38.0	46.5		8.3	23 2.0	57.6	L	8.5	28.7	53.2		9.5	32.0	25.9	
9.4	34.8	0.3		9.5	45.0	3.3		9.5	23.8	44.6		9.5	37.6	45.5		9.5	35.3	40.2	
9.5	35.5	17.0		9.2	49.1	11.1		9.5	26.7	37.4		9.0	55.0	2.5		9.4	54.4	49.9	B
9.4	37.8	36.8		9.5	59.5	6.9		9.1	37.8	30.8		9.5	35 40.4	57.6		9.5	50 4.6	25.0	
9.5	57.1	55.3		8.5	12 1.2	53.9	K	9.5	45.4	12.7		7.0	50.0	41.2	B	9.4	10.1	43.4	B
9.5	1 7.7	5.3		9.5	10.4	45.9		9.3	47.9	5.9		9.5	59.3	15.4		9.5	54.0	25.8	
9.5	11.8	9.1		9.5	42.3	58.1		8.8	24 10.0	46.4		9.5	36 1.4	29.5		7.3	51 4.6	34.9	L
9.5	15.1	55.0		9.5	59.0	2.5		6.0	11.1	12.3	K	9.4	17.8	37.3		8.2	8.3	27.3	L
9.5	24.3	9.0		8.8	13 0.7	30.9		9.4	11.7	14.1	B	7.5	20.6	20.9		9.0	36.9	28.9	
9.1	26.6	5.4		9.4	10.3	58.2		9.5	23.3	12.9		9.4	58.3	52.8		6.5	52 21.1	59.8	K
9.3	45.7	34.9		9.1	18.1	59.8		9.0	27.6	9.1	K	9.1	37 20.4	56.3		9.0	53 6.8	13.2	
9.2	47.8	35.5	B	9.5	18.6	5.2		9.5	31.2	58.5		8.0	28.5	53.9	K	9.1	7.4	28.0	
9.2	58.6	37.5		9.5	33.0	44.5		9.4	47.4	7.8		9.5	38 37.3	43.8		8.9	34.5	24.8	
9.1	2 0.4	15.2		8.5	45.3	13.7	K	9.5	25 15.7	53.8	B	8.5	50.6	29.2	K	9.5	54 5.8	2.3	
9.5	4.9	36.8		8.8	45.9	16.1	K	9.3	17.4	33.0	B	9.5	57.7	52.5		9.2	15.7	27.3	B
9.5	6.2	0.9		8.4	48.0	24.3		9.0	18.1	31.1	K	6.5	39 53.5	30.5	K	8.9	38.6	40.4	
9.0	15.8	19.0	B	9.5	50.8	41.8		8.8	35.7	38.7	K	9.5	40 3.8	48.2		9.3	45.8	28.7	
8.5	53.6	27.8	K	8.5	14 10.6	23.0	K	9.5	46.3	54.2		9.5	4.9	56.6		9.3	53.5	44.4	
9.4	3 6.1	3.1	B	9.0	26.5	4.8	L	9.1	47.0	6.4		9.3	9.7	10.7	K	9.3	55 4.1	42.5	
9.0	7.6	40.1	K	9.5	33.8	44.7		7.9	26 2.4	15.8	B	9.0	26.0	28.6	B	9.1	10.6	33.6	
9.5	21.4	55.0		9.5	39.7	29.5		9.4	14.4	48.4		9.5	41.6	10.0		8.5	20.0	47.7	
9.5	4 19.8	10.8		6.5	46.1	12.9	K	9.5	18.6	44.6		8.8	50.6	38.1		9.5	27.5	9.2	
9.4	27.8	23.4		9.5	58.7	48.7		9.4	23.1	11.2		9.4	41 0.8	50.2	B	9.5	40.5	6.2	
9.2	30.7	27.1		9.3	15 29.1	5.7		6.8	28.6	21.5	L	9.5	19.9	12.2		9.5	43.4	21.8	
9.5	38.3	11.6		9.5	29.5	21.9		9.4	43.0	43.8	B	8.0	28.5	5.7	K	9.1	44.1	41.3	
9.5	48.0	14.0		9.2	35.0	53.5		9.3	57.6	38.8		9.3	40.4	8.2	K	9.0	56 4.3	14.1	
9.5	5 2.0	28.0		9.0	39.1	41.2		9.5	27 24.8	42.3		9.5	44.5	16.3		9.5	25.2	57.0	
9.5	15.8	14.0		8.5	40.3	12.0	K	9.5	30.7	20.5		9.4	57.0	18.5		9.5	40.6	28.8	
9.5	28.0	21.8		9.5	45.8	14.1		9.5	37.4	12.7		9.0	59.4	24.3		9.2	54.6	48.1	
9.1	48.3	53.0		9.5	16 11.1	29.4	B	9.1	56.3	54.6	K	9.5	42 21.0	59.6		9.0	57 40.8	46.1	
7.8	6 8.6	19.9	K	9.5	20.2	4.9		9.5	28 50.5	56.8		9.5	37.6	30.2		6.0	42.9	2.9	K
8.3	26.3	29.5	K	9.5	32.8	44.2		9.5	29 1.3	32.1		8.9	51.7	19.5		7.5	58 22.0	9.7	K
9.5	38.4	22.7		9.5	17 7.3	14.2	B	9.5	28.8	12.6		9.0	52.4	46.1		9.5	33.1	12.0	
8.0	41.5	45.4	K	9.5	10.8	3.6		9.5	35.0	56.8		9.4	43 16.2	59.6		9.4	34.0	26.1	B
9.1	49.2	40.7		9.4	27.1	19.0		9.4	38.7	57.6	B	9.5	24.3	45.5		9.5	59 3.8	56.0	
9.4	7 23.6	12.0		9.4	31.7	19.9		9.2	41.8	7.5		8.4	44 8.9	52.2		8.5	14.6	11.9	K
9.0	48.1	43.3	B	9.2	34.7	58.5		9.1	57.9	50.2		9.5	14.6	22.0		9.5	32.1	12.0	
9.2	53.0	43.7	B	9.5	18 16.6	52.0		9.5	30 9.7	34.4		9.3	34.2	48.4		9.0	39.8	36.1	B
9.4	8 9.3	25.6		9.4	31.8	16.3	B	9.3	31 0.0	49.8		9.5	35.1	34.9		9.5	40.6	22.7	
9.3	24.6	40.6		9.4	33.9	40.2		9.2	37.7	11.2	K	9.3	45.8	28.5		9.3	0 41.0	59.5	
9.2	27.2	55.7	B	9.3	35.4	25.0		8.5	44.0	32.8	K	9.5	45 4.3	49.3		9.4	1 20.4	54.5	
9.5	27.7	48.7		9.4	38.0	23.8		9.5	55.7	51.7		9.5	5.8	3.8		9.4	52.5	28.7	
9.5	33.3	51.5		9.4	19 0.6	43.5	B	8.2	32 3.3	34.6	K	9.5	9.7	1.2		9.4	2 3.6	7.7	
9.4	52.0	11.2	B	9.4	19.6	15.3		6.0	17.6	21.9	K	8.6	33.3	52.9		9.5	17.0	27.0	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ª		+23°		6ª		+23°		6ª		+23°		6ª		+23°		6ª		+23°	
m	° ′	″	′		m	° ′	″	′		m	° ′	″	′		m	° ′	″	′	
7.5	10	33.0	19.3	L	9.5	19	8.5	42.8		9.5	27	30.7	35.1		9.5	35	51.5	43.3		9.4	46	24.8	57.8	
9.4		38.2	59.5		8.2		9.0	45.8	K	9.5		39.8	31.1		9.4	36	1.9	26.5		9.2		50.9	52.7	B
9.3		49.5	5.1		9.5		10.3	1.0		9.5		47.2	57.3		8.8		6.0	22.3	K	9.5		56.0	39.8	
9.4		52.0	20.8		9.5		18.8	30.5		9.5		52.2	43.8		9.4		30.2	50.3	B	9.4	47	2.3	3.4	
9.3		52.6	40.1		9.5		39.9	26.3		7.4		54.9	12.6	B	9.5		31.5	42.8		9.3		9.9	27.7	
9.3		59.3	53.2		9.3		42.3	9.3		9.5	28	30.7	35.9		7.6		33.4	47.5	L	9.1		24.5	42.8	
9.3	11	4.0	19.9		9.4		46.5	57.6		9.5		33.5	54.5		9.4		41.2	34.5		9.4		25.4	7.7	
9.5		6.2	47.6		9.5		58.4	40.2		8.7		50.6	37.8		9.4		41.3	53.4		9.5		53.2	26.3	
9.1		9.3	19.6		9.0	20	0.8	30.1		8.7		51.5	45.2	S	8.9		50.8	59.9		9.5	48	7.6	8.4	
9.4		10.0	53.5		9.3		3.9	1.1		9.5		59.9	23.0		9.2		53.3	50.9		8.8		24.5	32.4	
8.2		17.9	27.8	K	8.9		5.3	54.6		9.5	29	1.2	13.9		7.3	37	22.8	30.9	K	9.1		34.3	18.6	B
9.5		32.1	31.2		9.5		13.0	22.0		9.0		2.3	17.6		8.8		28.3	54.9	K	9.1		43.9	23 6	
9.5		35.8	19.3		9.4		24.3	4.7		7.3		4.5	43.3	L	8.4		50.0	58.8	K	9.5		45.7	56.1	
9.5		39.5	40.6		9.5		48.7	58.3		9.2		17.8	12.9		8.2	38	1.4	50.0	K	8.0	49	2.1	4.9	L
9.3		43.0	22.9		9.5	21	2.6	38.3		9.5		54.9	19.4		9.5		20.7	51.4	B	9.5		13.7	56.7	
9.5		55.3	30.2		9.5		14.3	53.9		9.1	30	3.2	11.4		9.5		54.5	46.6		9.4		15.6	22.1	B
9.5	12	15.6	41.6		9.5		18.2	33.8		9.3		10.2	28.6	B	9.5	39	5.3	3.1		9.3		45.9	49.8	
9.4		17.4	47.3		9.5		33.5	27.4		9.1		15.5	45.2		9.5		17.3	53.3		9.5		47.6	22.2	B
9.5		24.9	35.2		9.3		46.4	59.9	B	9.2		17.9	4.7		8.0		31.5	23.5		9.5		52.7	58.3	
9.3		30.6	40.1		8.7		50.6	37.7	K	8.9		32.2	34.0		9.5		38.1	19.3		9.5		55.6	30.3	
9.5		55.2	59.2		9.5		54.3	54.4		9.5		37.0	21.3		9.5		39.3	35.8	B	9.5	50	17.1	4.5	
7.7		58.4	49.8	L	9.2		59.6	40.2	K	9.5		49.9	24.5		9.5	40	3.2	35.9		8.5		40.5	17.3	K
9.5	13	28.2	10.3		9.4	22	0.3	54.1	B	9.3		52.9	25.5		8.8		8.8	53.1		9.5	51	7.7	23.8	
9.5		52.0	43.5		9.5		10.4	47.8		9.2		54.5	45.7		7.6		21.4	21.5	B	9.5		18.2	58.6	
9.5		52.2	12.7		9.5		41.7	35.5		9.5	31	2.3	7.7		9.5		24.8	38.7		9.5		51.2	15.2	
9.5		52.6	17.6		9.5		48.7	32.8		7.8		15.4	48.2	K	9.5		39.2	41.8		8.0		54.8	39.7	K
9.4	14	6.7	35.3		9.5	23	11.3	4.9		9.1		21.5	57.8		9.1	41	6.9	10.7	B	9.3		59.9	56.7	
9.5		8.0	20.9		9.2		24.4	54.7		9.0		26.8	4.9		9.5		21.0	9.4		9.4	52	1.2	8.6	
9.5		10.3	2.2		9.0		52.6	13.1	B	9.4		31.3	38.5		8.5		49.5	49.7	K	9.2		1.9	48.5	K
9.0		24.3	53.8		9.4		54.8	28.5		9.0		34.1	35.8	B	9.5		57.3	25.8		9.3		14.7	15.8	B
9.4		36.8	30.3		9.1		57.0	11.2		8.8		35.4	46.5	K	9.5	42	5.6	7.1		9.4		25.8	4.2	
9.3		41.3	8.0		9.4	24	11.0	22.6		9.5		37.9	32.4		9.5		20.3	35.0		9.4		38.5	38.8	B
9.3		43.4	31.0		9.5		13.3	37.3		9 0		42.4	2.3	K	8.5		34.5	32.0	K	9.5		52.0	42.8	
8.5		44.3	9.2	K	9.5		16.8	29.3		9.2		45.0	20.3		9.3		38.3	2.7	K	8.9	53	18.3	52.6	B
9.0		52.1	56.0		9.3		17.4	27.1		8.7	32	8.8	18.0	K	9.5		45.4	50.9		9.2		22.6	16.5	
9.2	15	12.7	33.2		9.3		24.3	53.5		9.3		12.5	32.4		9.5		55.5	25.2		9.3		45.5	58.9	
9.5		21.3	2.4		9.5		26.4	48.3		9.5		29.4	58.7		9.5	43	2.3	5.5		9.2		47.0	54.4	
8.7		45.8	29.7	K	8.5		39.5	16.8	B	9.5		31.1	4.2		6.5		12.2	47.2	K	9.5		49.7	33.8	
9.5		51.1	7.2		9.0		42.8	30.4	K	9.3		36.5	44.0		9.5		46.6	58.2	B	9.0	54	37.2	23.8	
8.6		53.2	43.6		9.5		51.7	35.6		9.3		50.6	21.2	B	8.9		52.8	11.6		9.2	55	6.4	17.2	
9.5	16	8.4	56.2		9.2		58.8	29.4	K	9.4	33	0.0	33.1		9.5	44	12.7	35.7		9.1		17.5	53.1	B
9.5		8.4	9.9		9.4		59.3	9.9		9.4		22.4	0.0		9.4		13.3	0.7		9.3		19.5	36.8	
9.2		9.9	55.0	B	9.0	25	15.3	9.4	K	9.3		23.8	28.0		8.9		30.5	23.8	B	9.5	56	1.0	47.3	
7.2		28.4	47.4	K	9.5		19.6	41.0		9.5		28.3	51.1		9.5		33.7	11.7		9.5		13.1	5.5	
8.5		33.3	8.2	K	9.5		23.3	51.3		9.4		44.1	15.5		8.9		37.3	18.5		9.5		14.7	59.9	
7.5		43.8	31.2	K	9.4		44.2	56.2		9.5		56.0	2.7		9.4		40.8	46.7		9.5		23.4	56.6	
6.8		44.9	23.8	L	9.0		48.1	18.7		8.2	34	7.0	21.4	K	9.1		52.6	42.9	B	8.9		24.0	54.6	K
9.5	17	7.9	5.5		9.2	26	0.8	29.2	K	9.4		24.5	44.6		9.5		55.8	15.5		9.5		29.0	32.8	
9.5		22.7	25.9		9.5		11.0	6.1		9.5		49.7	34.3		9.2		57.3	3.6		9.0		32.3	23.7	K
9.5		30.6	55.2		9.5		24.0	27.8		9.2		54.7	4.5		9.5		59.5	46.7		9.0		33.3	22.7	K
9.5		36.3	53.5		9.4		25.5	25.9	B	9.5		58.4	6.5		9.5	45	0.5	42.8	B	8.5	57	1.1	29.9	K
9.1		39.4	46.6		9.5		31.1	17.5		9.5		58.7	35.1		9.2		11.6	29.4		9.3		26.3	52.6	
9.5		54.3	2.9		9.5		59.9	25.4		9.3	35	3.0	20.8		9.0		37.2	9.1		9.5		41.8	49.2	
9.1		59.3	6.5	K	9.4	27	5.9	25.2		9.1		5.2	14.4		9.5		51.3	21.0		9.3		49.6	4.9	
9.5	18	5.7	57.9		9.3		8.8	3.7	B	9.3		5.4	27.0		9.4		55.1	4.2	B	9.2		50.8	43.3	
8.5		10.4	48.9	K	9.4		10.6	3.1		9.4		12.8	31.0		9.5	46	0.3	52.9		9.5		51.8	58.8	B
9.3		34.8	47.3	B	9.5		21.7	35.2		9.3		33.3	8.3		9.5		4.1	37.3		8.0	58	0.3	27.8	K
9.5		47.4	3.8		9.4		23.6	3.9	B	9.3		30.9	25.3		9.3		9.5	46.2		9.5		7.5	44.0	
9.5		56.2	14.4		9.5		25.2	36.7		9.5		36.9	22.8		9.5		12.9	19.4		9.5		9.8	7.6	
9.4	19	2.8	32.2		9.3		27.4	47.3		8.5		49.7	34.9	B	9.5		18.5	34.0	B	9.4		24.3	41.9	

6ᵘ—8ᵘ **+23°**

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	6ᵘ—7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ—8ᵘ	+23°	
m				m				m				m				m			
9.3	58 23.8	9.1		9.5	8 56.6	59.8		9.4	19 24.7	42.5		9.1	32 42.6	4.4		9.5	45 57.4	56.0	
8.8	37.3	49.9		9.5	58.0	6.2		9.5	40.5	43.8		8.8	44.6	31.3	K	9.5	58.7	39.8	
8.8	37.8	35.4		9.1	9 3.3	54.4		9.0	46.0	9.9		9.1	44.8	8.2		9.1	46 49.6	0.6	K
9.0	42.0	2.4		9.3	11.5	55.6		9.3	50.7	51.2		9.0	52.6	51.6		9.4	58.0	8.2	
9.0	43.3	10.6	K	9.4	32.7	17.0	B	9.5	55.4	58.8		9.5	53.0	32.6		9.4	47 5.6	18.7	B
9.5	45.8	21.6		9.5	38.7	12.5		9.5	20 8.2	12.6		9.0	55.3	56.8	B	9.2	13.2	42.1	
9.0	50.0	26.4		9.1	42.9	43.7		8.7	9.5	6.9	K	8.5	58.1	25.0	K	9.5	15.8	23.0	
8.5	59 19.3	53.0	K	9.3	59.2	13.1	B	8.3	36.7	5.7	K	9.5	59.4	1.9		9.5	25.3	52.2	
9.5	43.3	5.4		9.4	59.4	10.1		8.7	55.3	21.9	L	8.3	33 2.6	51.1	L	9.5	38.2	5.6	
9.5	44.8	44.3		8.9	10 35.9	58.3	K	8.5	21 21.3	7.7	K	8.8	15.6	22.4	K	9.5	41.5	7.5	
9.3	57.0	59.4		9.5	54.3	32.4		9.5	25.0	57.1		9.5	18.8	37.4		9.3	48 6.2	5.5	
8.7	0 3.8	29.9	K	9.5	11 0.3	46.2		8.9	34.2	6.5	K	7.8	25.1	15.2	K	9.5	14.8	34.6	
9.5	9.0	52.5		9.5	14.0	2.0		9.5	51.8	23.5		9.5	43.0	36.4		9.0	31.0	22.9	
9.0	19.8	45.7		9.1	29.5	54.3		8.6	54.2	15.0	K	9.5	56 6	12.4		9.5	34.7	43.5	
9.5	24.5	12.0		9.2	30.6	51.3		9.4	22 13.2	58.2	B	8.3	34 20.8	36.1		9.5	49 23.8	46.4	
9.5	26.2	57.9		9.3	34.3	59.7		9.1	52.3	11.2		var	21.5	47.3		9.2	24.8	40.1	
8.3	30.0	52.8	K	9.5	38.0	46.5		8.3	23 2.0	57.6	L	8.5	28.7	53.2		9.5	32.0	25.9	
9.4	34.8	0.3		9.5	45.0	3.3		9.5	23.8	44.6		9.5	37.6	45.5		9.5	35.3	40.2	
9.5	35.5	17.0		9.2	49.1	11.1		9.5	26.7	37.4		9.0	55.0	2.5		9.4	54.4	49.9	B
9.4	37.8	36.8		9.5	59.5	6.9		9.1	37.8	30.8		9.5	35 40.4	57.6		9.5	50 4.6	25.0	
9.5	57.1	55.3		8.5	12 1.2	53.9	K	9.5	45.4	12.7		7.0	50.0	41.2	B	9.4	10.1	43.4	B
9.5	1 7.7	5.3		9.5	10.4	45.9		9.3	47.9	5.9		9.5	59.3	15.4		9.5	54.0	25.8	
9.5	11.8	9.1		9.5	42.3	58.1		8.8	24 10.0	46.4		9.5	36 1.4	29.5		7.3	51 4.6	34.9	L
9.5	15.1	55.0		9.5	59.0	2.5		6.0	11.1	12.3	K	9.4	17.8	37.3		8.2	8.3	27.3	L
9.5	24.3	9.0		8.8	13 0.7	30.9		9.4	11.7	14.1	B	7.5	20.6	20.9		9.0	36.9	28.9	
9.1	26.6	5.4		9.4	10.3	58.2		9.5	23.3	12.9		9.4	58.3	52.8		6.5	52 21.1	59.8	K
9.3	45.7	34.9		9.1	18.1	59.8		9.0	27.6	9.1	K	9.1	37 20.4	56.3		9.0	53 6.8	13.2	
9.2	47.8	35.5	B	9.5	18.6	5.2		9.5	31.2	58.5		8.0	28.5	53.9	K	9.1	7.4	28.0	
9.2	58.6	37.5		9.5	33.0	44.5		9.4	47.4	7.8		9.5	38 37.3	43.8		8.9	34.5	24.8	
9.4	2 0.4	15.2		8.5	45.3	13.7	K	9.5	25 15.7	53.8	B	8.5	50.6	29.2	K	9.5	54 5.8	2.3	
9.5	4.9	36.8		8.8	45.9	16.1	K	9.3	17.4	33.0	B	9.5	57.7	52.5		9.2	15.7	27.3	B
9.5	6.2	0.9		8.4	48.0	24.3		9.0	18.1	31.1	K	6.5	39 53.5	30.5	K	8.9	38.6	40.4	
9.0	15.8	19.0	B	9.5	50.8	41.8		8.8	35.7	38.7	K	9.5	40 3.8	48.2		9.3	45.8	28.7	
8.5	53.6	27.8	K	8.5	14 10.6	23.0	K	9.5	46.3	54.2		9.5	4.9	56.6		9.3	53.5	44.4	
9.4	3 6.1	3.1	B	9.0	26.5	4.8	L	9.1	47.0	6.4		9.3	9.7	10.7	K	9.3	55 4.1	42.5	
9.0	7.6	40.1	K	9.5	33.8	44.7		7.9	26 2.4	15.8	B	9.0	26.0	28.6	B	9.1	10.6	33.6	
9.5	21.4	55.0		9.5	39.7	29.5		9.4	14.4	48.4		9.5	41.6	10.0		8.5	20.0	47.7	
9.5	4 19.8	10.8		6.5	46.1	12.9	K	9.5	18.6	44.6		8.8	50.6	38.1		9.5	27.5	9.2	
9.4	27.8	23.4		9.5	58.7	48.7		9.4	23.1	11.2		9.4	41 0.8	50.2	B	9.5	40.5	6.2	
9.2	30.7	27.1		9.3	15 29.1	5.7		6.8	28.6	21.5	L	9.5	19.9	12.2		9.5	43.4	21.8	
9.5	38.3	11.6		9.5	29.5	21.9		9.4	43.0	43.8	B	8.0	28.5	5.7	K	9.1	44.1	41.3	
9.5	48.0	14.0		9.2	35.0	53.5		9.3	57.6	38.8		9.3	40.4	8.2	K	9.0	56 4.3	14.1	
9.5	5 2.0	28.0		9.0	39.1	41.2		9.5	27 24.8	42.3		9.5	44.5	16.3		9.5	25.2	57.0	
9.5	15.8	14.0		8.5	40.3	12.0	K	9.5	35.7	20.5		9.4	57.0	18.5		9.5	40.6	28.8	
9.5	28.0	21.8		9.5	45.8	14.1		9.5	37.4	12.7		9.0	59.4	24.3		9.2	54.6	48.1	
9.1	48.3	53.0		9.5	16 11.1	29.4	B	9.1	56.3	54.6	K	9.5	42 21.0	59.6		9.0	57 40.8	46.1	
7.8	6 8.6	19.9	K	9.5	20.2	4.9		9.5	28 50.5	56.8		9.5	37.6	30.2		6.0	42.9	2.9	K
8.3	26.3	29.5	K	9.5	32.8	44.2		9.5	29 1.3	32.1		8.9	51.7	19.5		7.5	58 22.0	9.7	K
9.5	38.4	22.7		9.5	17 7.3	14.2	B	9.5	28.8	12.6		9.0	52.4	46.1		9.5	33.1	12.0	
8.0	41.5	45.4	K	9.5	10.8	3.6		9.5	35.0	56.8		9.4	43 16.2	59.6		9.4	34.0	26.1	B
9.1	49.2	40.7		9.4	27.1	19.0		9.4	38.7	57.6	B	9.5	24.3	45.5		9.5	59 3.8	56.0	
9.4	7 23.6	12.0		9.4	31.7	19.9		9.2	41.8	7.5		8.4	44 8.9	52.2		8.5	14.6	11.9	K
9.0	48.1	43.3	B	9.2	34.7	58.5		9.1	57.9	50.2		9.5	14.6	22.0		9.5	32.1	12.0	
9.2	53.0	43.7	B	9.5	18 16.6	52.0		9.5	30 9.7	34.4		9.3	34.2	48.4		9.0	39.8	36.1	B
9.4	8 9.3	25.6		9.4	31.8	16.3	B	9.3	31 0.0	49.8		9.5	35.1	34.9		9.5	40.6	22.7	
9.3	24.6	40.6		9.4	33.9	40.2		9.2	37.7	11.2	K	9.3	45.8	28.5		9.3	0 41.0	59.5	
9.2	27.2	55.7	B	9.3	35.4	25.0		8.5	44.0	32.8	K	9.5	45 4.3	49.3		9.4	1 20.4	54.5	
9.5	27.7	48.7		9.4	38.0	23.8		9.5	55.7	51.7		9.5	5.8	3.8		9.4	52.5	28.7	
9.5	33.3	51.5		9.4	19 0.6	43.5	B	8.2	32 3.3	34.6	K	9 5	9.7	1.2		9.4	2 3.6	7.7	
9.4	52.0	11.2	B	9.4	19.6	15.3		6.0	17.6	21.9	K	8.6	33.3	52.9		9.5	17.0	27.0	

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	8ᵘ		+23°		8ᵘ		+23°		8ᵘ—9ᵘ		+23°		9ᵘ		+23°		9ᵘ—10ᵘ		+23°
m	′	″	′		′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
8.1	2′	19.8	9.5	K	9.5	19′	16.0	19.5	9.5	49′	11.1	54.8	9.2	13′	22.0	25.7	9.5	36′	0.0	3.1
9.3		42.5	56.5		9.5		23.6	6.3	9.5		19.4	58.4	9.4		26.5	10.5	9.5		10.5	45.6
9.1		51.3	31.5		9.3		54.1	31.6	8.3		28.7	31.2 K	9.5		31.4	2.8	8.8		42.4	57.2
9.4		52.0	27.3		9.5	21	27.3	13.6	9.3	50	30.0	18.1 B	9.4		36.0	10.5	9.4		47.5	13.5
8.3		54.0	54.3	K	9.2		51.5	6.5 K	9.5		31.5	21.3	9.5		48.0	6.6	9.0		48.9	27.7
8.9	3	21.1	49.2		9.1	22	2.0	6.2 K	8.7		37.5	18.1 K	9.4	14	2.5	9.0	9.5	37	20.2	2.1
9.0		44.2	59.7		9.0		10.8	58.5	8.0		44.5	21.3 K	9.1		17.1	11.7	9.0	38	49.1	17.7
9.1		55.5	33.5		9.4		23.6	44.3	9.5		53.7	46.7	9.3		26.0	35.0	9.4	39	43.6	10.6
9.5	4	17.6	26.0		9.3	24	16.5	49.4	8.0	52	6.2	1.9 K	9.0		27.3	55.7	8.0	40	43.6	14.6 K
9.5		35.9	57.3		9.5		24.9	55.0	8.3		8.5	17.1 K	8.7	15	21.8	26.7 K	9.1		53.0	57.6
9.2	5	1.5	6.6	K	9.5		27.3	59.8	8.7		30.1	22.2 K	9.5	16	43.2	56.4	9.1	41	37.5	48.0
9.5		5.3	58.6		9.5		59.5	22.9	9.5	53	16.3	5.5	8.0		44.3	24.4 L	9.5		50.5	10.4 B
6.5		7.2	35.2	K	9.1	25	59.6	43.7 B	9.2	54	39.9	39.7	8.9		49.7	37.2	9.5		59.4	40.1
9.2		12.1	12.9		9.0	26	48.0	12.3	9.5		52.8	48.7	8.9	17	7.2	13.0 K	8.0	43	50.3	40.8 B
9.2		36.6	26.9		9.4	27	1.5	7.1	7.3	55	2.4	11.2 K	8.8		21.5	15.3 K	9.5		55.1	0.5 B
9.4		50.7	3.9		9.5		10.8	21.2	9.5		18.3	0.9	8.8		50.8	15.4 K	8.0	44	41.8	17.8 K
9.5		55.0	14.2		8.8		42.9	58.0	9.3		24.0	48.4	9.0	18	2.3	15.7 K	9.5	46	21.7	22.9
8.6	6	12.8	9.1	K	8.6	28	26.5	45.0 K	9.5		26.5	57.7	9.5	19	20.5	25.0	9.4		48.5	41.2
9.3	7	0.6	46.0		9.3		44.3	3.0	9.4	56	36.0	2.1 B	8.2		26.9	57.5 K	9.5	47	2.1	54.4
9.5		18.4	5.5		9.5	29	28.5	37.1	7.0		38.4	26.3 K	9.0		27.2	27.4	8.8		37.9	19.1 K
9.4		23.0	52.3		9.5		37.5	47.4	8.5	57	9.3	38.1 K	8.0		29.8	36.4 L	8.7	48	22.0	49.4 B
8.7		54.5	12.9	K	9.4		45.1	1.9 B	9.5		18.2	5.5	8.0		42.8	54.5 K	9.0	49	17.7	3.3
9.0		57.0	1.1		9.5	30	17.5	8.5	9.3		45.1	32.6	8.8	20	11.3	45.0 K	7.5		59.9	22.5 K
8.5		58.2	21.5	K	9.5		22.0	23.9	9.4	58	15.3	40.2	9.5	22	41.5	0.2	8.2	51	15.5	57.6 K
8.3	8	25.0	11.9	K	9.0		46.9	18.5 K	8.2		38.2	55.2 K	9.0		52.1	50.5	9.0		26.6	21.9
9.3		42.3	1.0		9.5	31	51.0	36.4	9.5		51.5	8.5	9.5		59.8	24.7	9.5		32.1	57.0
9.3		45.5	26.0		9.5		51.8	16.1	8.4		56.3	27.4 K	4.5	23	26.2	53.6 K	9.0	52	0.2	42.9
9.3		47.5	14.8	B	9.2		57.1	57.7 K	6.5	59	5.2	33.6 K	9.1		58.5	53.6	9.3		27.8	9.0
9.5	9	9.5	51.2		9.5	32	17.5	33.3	7.8		32.7	2.4	9.5	24	2.0	33.2	9.5		53.7	33.2
9.5		12.3	16.0		9.2	33	1.6	21.3	9.0		58 0	57.4 K	9.5		15.5	56.1	9.1	53	17.1	25.3
9.3		57.6	37.2		9.3		21.5	46.0	9.0	0	3.9	29.5	9.5		35.0	57.7	9.5		37.3	4.4
9.0	10	56.0	45.5		9.2		48.4	29.2 K	9.5		24.2	44.4	9.3	25	53.1	18.0	9.3		43.2	42.5
9.5	11	32.1	48.0		9.5		53.8	47.4	9.4	1	28.2	19.9	9.4		54.7	23.4	9.4	54	21.6	11.8
9.5	12	8.3	20.0		9.3	34	51.7	2.1	9.5		36.2	6.8	9.5	26	54.4	58.7	8.8		44.8	22.2
9.5		26.0	31.8		8.2	35	18.9	13.8 K	7.9		37.0	15.8 K	9.5		59.1	0.8	9.5	55	40.0	54.0
9.5		26.1	40.8		9.5		51.0	9.5	9.5	2	1.5	33.7	7.5	27	48.1	50.3 K	7.8	56	31.1	16.0 K
9.5		44.2	54.2		9.5	36	25.4	39.6 B	9.1		11.9	8.6	9.4		59.9	59.4	9.0	59	27.8	25.7
9.5		46.0	49.2		9.4		25.8	54.0	9.4		52.3	43.0	9.0	28	31.0	56.3	9.4		59.5	52.0
8.2	13	19.0	25.0	K	9.0	39	7.0	37.1	9.0	3	1.9	41.9 K	9.4		41.5	1.3	9.5	0	30.8	5.4
8.5		27.3	33.3	K	8.7		58.9	56.1 K	9.0		49.2	24.0	7.0		42.8	41.4 K	9.3	1	21.1	8.5
8.9		36.8	58.5		9.5	40	33.5	29.8	9.5	5	42.8	28.5	9.1		58.1	21.2	9.5	2	6.3	46.3
9.5	14	2.0	12.6		9.5	41	34.7	18.5	7.8	6	33.0	18.8 K	9.2	29	12.1	34.6	9.1	3	13.8	59.1
9.5		29.5	54.0		9.5		42.0	25.4	7.5		49.1	57.8 K	9.2		14.2	40.6	9.4		35.8	48.3
9.1		52.8	38.5	K	8.5	42	0.3	40.1 K	9.4		50.9	42.0	9.3		44.0	10.2	9.5		54.9	10.8
9.4	15	11.6	45.3		9.3		53.8	22.3	9.0		53.6	57.5 K	9.0		50.5	36.7	9.3		58.2	41.8
9.5		17.1	38.4		9.5	43	18.9	18.1	9.4		59.8	37.0 B	7.8	30	21.6	42.8 K	8.8	4	20.9	4.9
9.4		35.5	45.3		9.2		22.8	59.2	7.8	7	5.3	24.1 K	9.0		25.1	8.8	9.3		34.5	42.9
9.3		38.0	40.5		9.0	44	30.4	51.3	7.9	8	18.9	30.9 L	8.8		28.5	37.1 K	9.5		44.6	53.9
9.4	16	55.6	13.0		8.5		41.5	15.4 K	9.5		40.3	42.3	9.5	31	10.6	57.2	9.1		48.8	9.8
9.1		56.7	32.7		9.5	45	19.5	23.3	9.5	9	5.1	52.6	9.1		24.1	30.1	8.3	5	1.5	34.3 K
9.5	17	10.5	19.0		9.1		28.5	18.1 K	9.5		7.7	56.3	9.4		44.9	0.4	9.5		11.5	25.7
9.5		22.2	45.8		8.5	46	0.6	34.1	6.5		27.2	41.3 K	9.5	32	26.5	10.1	9.4		33.0	18.8
9.5		32.1	11.2	B	9.4		24.5	20.6	9.4	10	17.7	0.9	9.1		46.1	59.2	9.5		37.0	14.5
9.4		37.1	25.5		9.5		56.0	36.7	8.6		33.8	30.9 K	9.5		55.2	9.5 B	9.3		55.9	56.1
9 2		45.8	25.8	B	8.5	47	36.4	37.1 K	9.3	11	16.3	24.0	9.0		58.1	20.1 K	9.5		58.0	10.6 B
9.3	18	19.5	51.8		9.1		44.7	47.6 B	9.5		23.1	13.0	9.4	33	21.0	14.1	8.9	6	5.7	29.1
9.3		26.0	57.0		9.4		45.2	49.7	9.5		26.4	0.2	9.3		24.5	13.0	9.3		41.3	43.0 B
8.7		27.7	50.5		9.2		51.6	53.5	8.2	12	23.8	15.8 K	9.1		38.3	32.8	9.5	7	6.8	51.5
9.5		42.8	7.1		9.5	48	31.1	35.3	7.9	13	4.0	31.0 K	8.0		48.2	58.1 K	9.3		11.9	50.2 B
7.8		54.3	37.5	K	9.2		34.2	54.8	7.8		19.8	22.7 K	9.5	35	4.2	14.4	9.2		20.5	8.8

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	10ʰ	+23°			10ʰ—11ʰ	+23°			11ʰ	+23°			11ʰ—12ʰ	+23°			12ʰ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	7 27.1	31.5		8.0	39 25.8	20.6	K	9.5	7 23.7	8.6		9.2	37 17.3	2.3		7.7	10 0.8	0.5	K
9.1	8 35.9	39.0		9.0	47.7	21.7	K	5.0	29.6	53.4	K	9.0	26.1	18.6		8.8	32.9	39.1	K
9.4	50.0	2.1		9.1	53.9	37.5		9.1	31.8	0.5	B	9.2	38 26.6	10.6		9.1	40.0	5.3	
9.1	52.8	12.4		8.5	41 47.0	35.8	K	9.2	40.9	0.1	K	9.5	39 11.1	43.8		8.9	48.1	6.7	
9.2	56.7	26.8		7.8	59.1	56.6	K	9.5	8 16.3	34.0		9.0	14.4	15.0	B	8.5	50.9	30.4	K
9.5	9 10.1	32.4		9.5	42 0.7	44.0		9.3	40.5	23.9		9.4	22.2	6.4	B	9.5	11 6.4	50.3	
6.5	16.1	50.3	K	9.1	30.7	19.6		9.0	9 5.9	3.6	K	9.5	58.5	19.1		8.5	17.1	56.1	K
9.1	24.4	4.7		9.5	43 20.2	43.0		9.4	16.3	15.2		9.1	40 4.5	47.4	B	6.3	59.8	50.4	K
8.5	22.8	57.6	K	9.1	48.5	39.9		8.1	43.7	36.8	K	9.4	12.8	41.4		8.3	12 4.9	20.8	
9.5	10 37.9	29.8		9.5	50.7	45.4		9.5	11 45.0	6.7		9.1	29.3	39.4		9.4	22.0	16.3	
9.5	42.8	16.3		9.0	44 49.0	57.6		8.9	12 11.6	49.9	K	9.4	41 9.7	58.4		8.0	13 23.5	42.8	K
9.3	11 31.0	20.4		9.4	59.6	32.0		8.8	18.5	39.1		9.0	59.8	18.1	K	9.5	44.4	47.1	
7.9	37.1	14.0	B	9.4	45 1.5	20.8	B	9.4	27.6	32.5		9.5	42 9.5	15.4		8.4	15 5.9	16.2	B
9.1	13 43.6	31.3		9.2	23.2	2.7		9.5	50.5	50.3	B	9.0	43 23.3	43.6		9.4	6.5	12.9	
9.4	48.0	54.9		9.4	44.7	24.2	B	9.2	56.1	34.7	B	9.5	25.5	2.1		9.0	29.2	39.1	K
9.3	14 27.3	33.3		8.7	46 41.7	43.0	K	8.5	13 2.3	40.9	S	8.5	33.8	32.6	K	9.5	16 10.9	39.1	
8.8	15 3.2	56.7		7.3	47 41.5	56.2	K	9.0	14 10.0	28.6		9.0	44 39.9	14.7		9.5	17 41.4	20.8	
9.5	16 12.3	32.5		9.5	48 4.3	30.3		9.0	34.0	51.3		9.5	45 2.1	55.6		8.3	46.5	44.8	K
9.5	28.8	45.3		6.2	28.1	7.9	K	9.2	37.8	37.5		9.0	3.7	31.5	L	9.5	19 9.4	28.6	
9.2	17 31.2	56.1		9.5	45.0	32.6		9.2	51.4	38.1	R	9.3	21.4	32.5		9.3	13.1	54.6	B
8.7	39.9	50.1	K	9.5	55.5	1.9		9.3	15 5.3	27.1		8.9	58.3	42.5		9.3	24.1	50.3	
9.5	40.5	59.8	B	9.5	49 46.8	30.6		9.1	11.0	16.5		8.6	46 31.7	26.7	K	9.5	41.4	35.5	
9.0	18 11.8	27.0		9.5	52.3	43.3		9.5	16 12.9	46.3		9.3	48 13.9	48.4	B	9.3	20 49.6	56.7	
9.4	23.1	13.3		9.5	50 2.3	13.7		9.5	37.9	40.0		8.2	14.0	26.8	L	9.4	21 51.2	56.1	
9.5	46.2	10.8	B	9.4	40.4	10.1		9.5	56.5	39.6		9.1	19.3	28.9	L	8.3	23 4.9	12.9	K
8.9	19 9.2	57.2		9.3	51 7.2	55.7		9.5	17 28.8	27.5		9.5	49 1.2	31.8		8.2	9.7	41.0	B
8.7	12.2	30.3	B	9.3	51.7	36.8		9.0	18 4.0	39.2		7.8	50.3	26.8	K	7.4	24 30.5	45.6	K
9.4	15.0	36.5	B	8.7	52 1.7	43.7	K	9.2	18.9	0.2		8.3	52.6	47.0	K	9.3	31.0	19.6	
9.4	21.4	4.5		9.4	1.7	13.1	B	7.0	30.3	31.3	K	9.5	50 38.7	14.4		9.2	39.5	21.2	
9.0	41.1	41.7		9.4	8.6	51.7		9.2	20 9.4	49.5		9.5	51 59.4	52.5		9.5	56.9	10.8	
9.4	20 7.8	14.2		9.4	31.5	10.9	B	9.3	17.1	36.6	B	8.3	53 0.0	20.9		9.0	25 29.9	48.7	K
9.5	24.8	52.2	B	9.5	33.8	28.9		9.5	28.1	18.3	B	9.5	52.7	55.3		9.5	26 4.4	11.8	
9.5	54.7	10.8		8.8	53 41.9	18.0		8.2	30.2	59.3	B	9.0	58 11.7	33.2		9.5	15.9	17.2	
9.3	21 22.4	48.1	B	9.4	45.2	21.5	B	9.3	22 30.0	47.6		9.3	21.6	58.7		9.5	43.9	21.8	
9.3	23 12.8	10.6		9.2	47.7	47.1		9.0	30.9	24.8		9.5	59 22.8	55.0		4.8	27 37.4	25.9	K
9.0	24 13.3	10.9		9.5	55.7	2.3	B	8.8	23 9.6	3.8	K	9.2	45.4	3.6		8.3	43.5	56.6	K
8.8	14.4	21.9		8.5	54 16.3	22.3	K	9.1	44.7	30.0		7.0	0 5.1	51.3	K	9.3	28 42.1	4.0	K
9.5	25 8.2	47.8		9.5	34.9	4.2		7.5	45.6	37.6	K	9.5	23.3	50.8		9.4	30 54.9	26.3	
8.8	18.8	34.6		9.3	58.3	18.5		9.4	24 12.8	27.9	B	9.5	25.0	44.6		7.0	31 49.4	26.7	K
9.5	41.5	13.0	B	9.0	55 9.7	48.6		9.0	18.6	37.2		9.0	45.5	2.3	K	9.4	32 18.9	33.9	
8.6	57.3	33.3		9.0	12.4	54.8		8.0	26 45.6	41.1	K	9.4	1 17.2	30.9		9.4	26.7	21.9	
9.5	28 41.3	22.2		9.4	50.6	54.4		9.5	27 12.4	3.8		8.7	2 8.7	55.6	K	9.5	59.8	6.0	
9.5	30 19.5	6.3		8.2	56 10.4	56.6	K	9.5	23.9	58.2		7.3	36.3	26.7	K	9.3	33 11.8	49.0	K
9.5	26.7	58.8		9.5	12.6	46.3		9.3	40.3	37.5		9.4	42.9	1.2	B	9.3	27.9	46.6	K
9.4	34.8	30.1		9.3	14.9	49.6	B	8.5	29 2.6	11.8		9.5	3 31.2	24.6		9.5	42.3	39.1	
9.4	31 26.8	12.7		8.5	58 3.7	27.8	K	9.5	50.1	23.5		7.5	35.2	39.8	K	9.1	42.9	24.2	
9.5	34.8	41.5		9.5	59 29.6	28.1		9.3	30 41.1	44.4		9.3	39.8	43.6		9.5	56.0	49.0	
9.5	35.9	7.7		8.0	0 9.0	46.3	K	9.3	31 0.8	12.0		8.7	48.7	56.7	K	9.5	34 19.8	57.2	
9.5	32 10.3	25.4		9.3	39.7	27.4		9.5	11.9	34.8		7.5	57.8	24.0	L	9.5	35 52.2	59.2	
9.5	11.5	44.4	B	8.8	1 8.5	42.3	K	9.0	32 11.4	53.2		9.5	4 27.5	38.0	B	9.3	37 7.6	47.8	B
9.5	33 57.8	39.8		9.3	25.1	52.4		9.4	21.6	10.2	B	8.3	38.7	54.0	K	8.8	39 44.9	15.0	K
9.1	34 5.9	13.3		9.5	2 4.3	42.0		9.5	22.4	57.6		9.1	5 44.4	26.6	K	7.9	56.5	22.9	K
5.5	35 31.8	57.2	K	7.5	36.3	29.2	K	8.8	33 3.5	10.6		8.0	6 22.5	41.5	K	9.4	40 14.9	52.7	
9.2	36 21.0	39.5		9.4	3 21.5	53.2	B	9.5	34 5.6	12.7		9.4	56.1	38.8	B	7.6	43.6	30.6	B
9.5	22.0	26.3	B	9.5	22.3	42.0		6.5	34.6	1.1	K	9.5	7 24.2	54.2		9.5	54.8	4.7	
9.5	47.6	35.6	B	9.4	4 15.0	37.5	B	9.4	35 28.6	12.6		8.7	53.1	3.1		9.5	57.4	54.2	
9.3	38 30.5	55.7		9.3	38.3	24.7		9.5	40.6	14.4		9.5	8 35.4	34.1		9.5	41 43.3	54.8	
9.0	32.8	39.5	K	9.5	5 52.8	12.7		9.5	53.4	2.8	B	8.5	9 8.9	13.2	K	9.3	52.9	48.6	K
9.0	39 18.9	0.1	L	9.3	6 1.6	59.6		9.5	56.4	4.6		9.4	40.7	28.8		9.5	42 21.8	44.2	
9.4	21.2	4.0		9.3	22.2	44.8		8.6	37 2.0	10.6		9.2	41.0	27.6	B	8.9	27.0	55.3	K

2501—2560					2561—2620				2621—2680				2681—2740				2741—2800			
	12ᵐ—13ᵐ		+23°			13ᵐ		+23°		13ᵐ—14ᵐ		+23°		14ᵐ		+23°		14ᵐ—15ᵐ		+23°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.4	42	48.7	51.0	B	9.0	12	43.4	49.7	8.8	44	3.0	51.1	9.5	13	11.4	5.6	8.7	42	30.1	46.8	B
6.5	43	6.5	39.4	L	8.5	14	6.5	13.6	L	9.1		5.5	48.7		9.1		30.9	42.0	R	9.4		38.6	46.8	
9.5		14.5	9.0		9.5		56.6	7.4		8.0		45.3	28.8	K	9.5		31.0	50.9		9.4		51.4	49.2	
9.0		30.0	53.7	K	8.0		59.0	4.3	K	9.0	45	51.9	57.5	K	9.5	14	47.5	7.6		7.0	43	11.7	38.2	L
9.1		37.4	1.0		9.0	16	43.3	18.0	K	9.5	46	12.0	6.3		9.5	15	9.2	31.0		9.3		52.7	50.8	K
8.8	44	6.4	48.4	K	9.5	17	4.9	42.5		9.4		13.8	38.9		9.5		16.8	8.0		9.5		58.2	51.2	
9.4		24.5	2.8		9.5		33.8	20.8		9.3		15.8	22.9		9.1	16	15.2	52.9		7.9	44	15.3	30.6	K
9.5		38.0	19.4		8.3		36.7	57.3	K	9.0		26.7	29.0	B	8.9		28.5	17.6	B	9.4	45	27.2	26.4	
9.5	47	18.4	59.0		8.8	19	45.4	34.2		9.5	47	17.8	29.7		9.5		43.2	20.1		8.2	46	14.7	57.3	K
8.8	48	38.6	10.0	R	8.4		45.4	4.4		9.3	48	6.4	48.9	B	9.0	17	21.2	11.7	K	9.5	47	15.9	28.2	
9.4	49	35.6	36.4		8.4	20	15.9	42.8	K	7.3	49	2.8	24.3	K	9.3		48.2	43.0		8.5		22.4	56.2	K
9.5		49.6	51.2		9.5		47.1	32.9	B	9.3		56.0	4.1		8.5	18	8.7	19.6	K	9.1	48	41.8	58.7	K
9.2	50	42.8	39.5	K	9.5	21	20.2	40.8		9.3	50	53.9	9.6		9.5		19.0	35.8		9.5	49	34.3	22.0	
9.2		51.8	37.2	K	9.5		20.3	24.9		9.5		59.4	33.5		8.4	19	15.9	29.4	L	9.5	52	20.8	33.5	B
9.3	51	31.0	46.7		7.5	23	36.4	16.7	K	9.3	51	1.7	4.2		9.5		52.7	30.5		9.1		24.4	12.7	
8.3		40.6	1.0	K	9.4	24	24.9	51.5		8.8		51.8	34.5		9.3	20	36.1	27.0		9.3	53	4.7	43.0	K
9.5		46.5	43.6		9.2	25	10.3	10.1		9.4	52	12.8	12.5		9.4		43.0	18.0		9.4		38.9	15.1	
9.5	52	36.7	6.6		8.0		19.4	55.6	B	7.8		23.3	9.2	K	8.6		46.6	22.0	K	9.1		43.9	14.2	K
8.5		46.1	32.6	K	9.4		25.8	7.0		9.2		23.7	26.3	B	9.5	22	41.3	40.5		9.4		48.4	1.5	
9.0		52.5	56.1		9.1		36.9	15.2		9.0		34.8	34.5	K	9.4	23	10.0	27.3		9.5	55	7.0	33.2	
9.2	53	26.1	24.3		9.1		46.3	13.9		9.0		54.0	35.2		9.4		11.6	40.1	B	9.5		37.0	1.2	
9.5		44.0	29.9		9.3		51.3	26.3		8.5		56.9	38.6	K	9.4		17.5	52.1	B	9.5	56	13.3	2.1	
9.0	54	12.8	29.1	K	9.5	26	11.2	54.2		9.2	54	45.5	54.9	K	9.5		23.9	14.5		9.5	57	22.9	9.4	
9.3		31.7	50.0	B	8.8		26.9	45.9	S	6.5	56	36.3	11.9	K	9.5	24	17.7	9.0		8.8		53.8	44.1	B
9.3		34.8	55.0		8.6		53.9	27.0	L	9.5	57	15.8	14.7		9.5	25	15.8	29.6		9.5	58	7.3	53.5	
9.3		40.7	35.7	B	9.1	27	45.8	47.4		9.5		37.3	48.0		8.6	26	35.7	33.7	K	9.3		16.3	47.6	
9.4		52.4	58.2		6.5	28	21.9	14.6	K	7.3	58	57.8	26.3	K	9.1		47.8	0.7		9.3		25.9	34.5	
7.5	55	33.8	44.7	K	7.5		31.5	33.0	K	9.4	59	4.6	54.3		9.0	27	2.9	48.7	L	9.3		27.4	9.7	
9.5		46.7	3.5		9.0	29	55.5	30.4		9.5	0	15.3	42.1		9.1		49.2	14.5		9.3		43.1	32.9	
6.7		55.3	25.1	K	9.5	30	53.9	47.4		9.1		18.6	54.5		6.3	29	33.7	53.2	R	9.5		58.1	37.4	B
7.0		59.6	58.9	K	6.5	31	9.9	15.6	K	8.9		31.8	50.9		9.0		48.3	37.5		9.5	59	25.0	21.9	
8.8	56	58.5	4.2		9.5		47.3	42.0		8.7		39.3	9.4	L	9.5	30	12.5	57.5		8.5		25.3	14.9	K
9.5	57	4.6	11.5		8.4		49.5	27.7	K	8.3	1	33.8	15.6	K	9.5		41.2	58.8	B	9.1		28.8	55.9	K
9.5		49.5	7.4		9.5		54.3	41.8	B	9.5	2	9.3	25.1	B	9.5		56.3	43.3		9.4	0	18.4	9.3	
9.2	58	44.7	40.6	B	9.5	32	46.6	18.0		9.5		15.3	52.5		9.5	31	32.4	43.3		7.6		48.5	7.6	B
8.8		54.1	43.8	K	9.3		47.5	4.1		9.5		22.6	28.9		9.3	32	49.0	32.0		7.3		50.8	28.6	K
6.5	59	18.6	3.1	K	8.9	33	21.1	12.0		8.5		59.4	51.7	K	9.2	33	5.3	27.9		9.5	1	18.7	47.5	
5.8		20.6	24.4	K	9.1		24.7	15.3	K	9.5	3	5.3	25.6		9.5	34	12.7	55.6		8.9	2	27.3	32.9	
9.3	0	12.5	13.7	K	9.5		30.2	25.2		9.3	4	6.8	9.4		9.2		21.1	31.5		9.4		52.9	5.8	
9.4		54.3	54.3		5.5	34	13.9	16.6	K	9.1		32.8	30.8		9.3		37.1	58.2		8.7		53.2	21.5	L
8.9	1	41.6	44.8	B	8.0	35	14.4	21.8	L	8.1		33.1	21.6	K	9.0		47.7	56.2	K	9.2		59.4	5.1	B
9.1	2	20.4	0.0	K	9.3	36	10.9	52.1		7.5	5	54.3	4.1	K	9.5	35	15.3	21.0		8.5	4	12.7	12.3	K
8.8	4	54.9	58.6	B	9.4		15.5	37.4		9.5		59.8	13.2		9.5		35.2	19.0		9.2	5	18.4	59.5	
9.3		56.0	59.2		9.5		27.5	9.2	B	9.0	7	2.8	21.2	L	9.4	36	2.6	21.0	B	8.6		25.3	35.6	
9.4		57.0	56.9		8.7		44.4	39.3	L	9.2		20.9	53.3		9.5		13.0	22.5		9.5		48.7	52.0	
9.2		58.1	40.9	B	6.3		54.9	25.6	K	9.3		24.3	6.8		9.2		40.8	22.8	B	9.5	6	34.7	22.5	
9.4	5	20.0	37.1		9.5	38	0.0	8.7		9.5	8	0.8	50.0		9.3		42.5	33.0		9.1		44.9	2.4	
9.0		29.1	41.3	K	9.3		4.7	56.6		8.9		7.8	29.7	K	9.2	37	5.2	35.0		9.5	7	0.9	3.9	
9.3	6	32.2	17.8	K	9.4		39.5	27.5		9.4		52.6	0.3		8.7		34.3	23.0	K	6.4		8.3	31.7	K
9.5	7	0.0	14.7		9.5		50.7	3.9		9.4	9	13.8	39.4		8.9		35.2	26.4	K	9.4		53.2	45.0	
8.4	8	3.2	49.2	K	8.4		54.2	15.2	K	8.4		55.1	21.8	K	9.2	38	4.3	0.5		8.0	9	4.4	5.0	K
9.5		50.7	7.3		9.5	39	56.5	38.7		9.5	11	15.6	58.5		9.4	39	36.4	30.3		9.1		14.4	59.6	B
9.5	9	6.9	39.6		7.8	40	1.2	16.0	L	9.5		18.7	47.6		9.5		53.2	35.5		9.4		43.9	51.8	B
9.5		47.4	18.3		9.3		8.3	33.9		9.5		24.0	13.8		9.5	40	28.5	55.0		8.8	10	21.7	58.3	K
9.3	10	12.4	20.8		8.6	41	20.9	31.9		9.5		31.2	3.9	B	9.3		38.8	1.7		9.4	11	1.8	21.3	
8.5		36.3	26.4	K	9.0		54.5	13.7		9.5	12	0.8	21.0		8.3	41	37.2	34.3	K	9.4		26.2	4.3	
9.4	11	23.7	48.5		9.5	42	4.6	25.2		8.4		1.1	44.0	K	7.7		53.3	1.0	K	9.5	12	16.1	27.9	
9.4		33.1	50.8		8.8		14.1	0.5	K	9.4		21.7	35.8		9.5	42	1.6	57.8		8.6		56.4	46.2	L
9.0	12	28.1	32.9		9.1	43	36.8	31.1		9.5		37.8	57.1		9.0		24.6	41.7		9.4	13	23.5	19.3	
8.3		29.8	34.9	K	8.8		41.5	45.6		9.5		46.1	58.1	B	8.9		29.0	42.4		9.2		30.5	18.2	

2801—2860				2861—2920				2921—2980				2981—3040				3041—3100			
	15ᵘ	+23°			15ᵘ—16ᵘ	+23°			16ᵘ	+23°			16ᵘ	+23°			16ᵘ—17ᵘ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	13 53.5	33.4	L	9.0	42 11.6	7.3		9.5	12 38.9	22.6		8.6	37 20.2	27.3		9.1	58 10.1	16.7	K
8.7	14 4.9	5.2	K	7 0	36.9	42.2	K	9.5	13 9.7	27.7		9.5	29.2	51.0		9.3	13.3	7.7	
9.2	24.1	38.5		9.3	55.3	9.2	B	8.9	14 57.8	58.7	K	9.1	38.2	31.1		9.5	54.8	48.0	
8.2	15 0.3	43.0	K	9.3	43 22.8	10.5		7.7	15 3.9	19.5	R	7.0	38 5.1	46.9	K	9.3	57.1	33.4	B
9.4	3.5	6.9		9.4	36.1	42.0		9.5	7.0	58.4		9.5	34.7	41.8		9.3	59 10.7	36.4	
9.2	17 30.4	39.9		9.1	38.2	55.7		9.0	16 37.1	24.9	K	9.5	35.0	48.7		9.5	31.4	38.0	
9.5	18 10.2	19.3		8.5	54.8	36.8	L	9.5	56.1	58.0		9.5	50.9	8.0		9.5	49.2	18.2	
8.5	22.4	47.5		9.5	44 32.6	40.6		9.4	17 39.6	53.9		9.5	55.5	16.7		9.4	49.3	20.9	
9.4	56.9	5.9		8.9	45 22.7	52.0		8.8	42.2	8.9		9.5	58.5	29.8		9.4	51.6	37.2	
9.3	19 3.7	9.6		9.0	47 4.8	43.0		9.3	18 38.8	59.2		7.3	58.5	59.5	K	7.7	59.7	31.4	L
7.9	20 58.4	56.9	K	9.0	44.8	23.1	R	8.3	47.5	8.5	K	9.4	39 48.7	41.9		8.6	0 41.2	45.7	B
9.5	21 27.9	53.4		8.7	49 40.2	53.6		9.5	19 29.6	50.5		9.5	40 8.2	17.7	B	8.5	1 5.1	36.0	K
9.3	34.3	49.2	B	9.5	51 27.2	47.5		8.7	20 8.2	13.9	K	9.4	8.8	40.4		9.5	5.4	41.2	
9.5	22 11.8	56.0		9.4	53 30.5	57.4		8.2	8.6	24.6	K	9.0	13.0	49.2		9.5	36.3	27.4	
9.1	28.5	36.5		9.5	34.3	9.1		9.5	28.2	44.6		9.4	16.8	50.7	B	9.5	2 9.2	50.1	
9.5	36.6	7.3	B	7.3	46.3	25.5	K	9.5	59.5	57.6		8.8	39.4	35.9		9.5	16.2	34.6	
9.5	39.8	27.5		8.9	48.4	8.0	K	9.1	21 21.1	14.3	K	8.8	41 15.1	15.3	K	9.5	3 6.3	12.9	
9.4	58.4	17.2		9.2	54 0.8	18.9		8.0	22 48.1	13.2	L	8.8	17.2	28.4	K	7.9	35.0	45.3	B
8.3	23 15.2	48.8	K	8.5	41.7	15.4	L	8.5	23 17.0	56.4	L	9.1	43 23.4	2.7		9.5	4 5.9	17.7	B
9.5	57.4	59.8		8.8	48.1	12.6		8.8	24 5.1	35.3	K	9.5	54.2	37.2		9.5	27.5	44.2	
9.1	24 10.4	25.7		9.3	55 4.6	29.2		9.5	43.3	9.0		9.4	44 3.7	35.9	B	9.5	5 8.9	38.8	
8.5	25 10.9	2.5	K	9.4	12.8	29.9		9.4	25 2.0	11.7	B	9.2	23.2	30.2		9.5	6 33.5	15.2	
7.3	40.7	4.5	K	9.3	17.8	11.8	B	9.4	11.6	36.0	K	8.9	23.9	44.6		9.3	48.8	19.2	B
8.8	26 3.8	30.5		9.2	21.7	35.2	B	9.0	44.1	31.8	K	9.4	57.6	45.3		9.4	7 20.7	54.4	
9.5	12.5	31.6		9.4	30.0	29.9		9.3	51.9	3.0	K	9.1	45 20.7	33.5		9.0	46.9	29.3	K
9.5	27 6.7	52.7		4.6	56 3.5	12.3	K	8.5	26 23.0	32.8	K	7.5	28.1	52.8	L	9.0	50.8	5.2	
9.0	19.4	41.3		7.6	30.1	11.8	K	9.2	30.2	49.2	B	9.1	38.2	42.2		9.3	8 16.0	48.3	
7.7	23.9	55.3	L	9.5	37.0	20.3		9.4	31.2	54.4		8.3	41.9	52.9	K	9.5	33.5	21.4	
9.1	48.9	2.0	K	9.5	50.2	34.7		8.1	37.2	28.1	K	9.2	58.2	53.6		9.2	9 8.1	7.5	
7.6	28 3.4	42.2	K	8.5	57 18.6	10.2	K	9.2	38.5	34.6		9.4	46 7.1	18.5		7.0	41.2	54.8	R
9.5	46.8	49.2		9.0	31.8	46.5		8.1	27 2.2	25.6	K	9.0	8.5	47.4	K	9.0	10 4.0	25.8	
8.5	30 24.3	20.7		8.5	58 24.5	3.6	K	8.6	5.2	48.7		9.5	19.6	29.5		9.3	47.8	29.8	B
9.4	31 12.7	44.8	B	9.5	38.3	54.6		9.5	41.0	49.8		9.4	49.5	51.9		9.3	48.0	1.9	
9.0	21.2	58.6	B	9.4	48.3	1.8	B	9.3	28 48.2	1.3		9.4	53.0	52.2	B	6.5	11 32.9	15.5	L
8.3	27.3	57.5	K	9 0	59 13.4	34.4		9.0	54.4	7.5	K	9.5	47 23.9	21.5		9.4	55.3	25.9	
9.5	38.0	14.3		9.5	38.8	32.0		9.1	59.6	31.9	K	9.5	48 6.2	13.6		9.0	12 4.4	9.7	B
9.4	58.0	58.4	B	9.4	0 7.3	12.3	B	9.1	59.8	49.4		9.5	19.3	1.6		9.3	18.8	13.2	
7.4	32 6.6	8.5	K	9.4	17.1	36.5		8.5	29 12.1	33.6	K	9.4	29.5	22.2		8.0	17.7	35.2	K
9.0	8.7	50.1	K	8.4	19.0	16.5	K	9.4	15.0	8.2		9.5	49 8.1	3.8		9.5	26.6	29.2	
8.5	12.3	56.1	K	9.3	51.3	48.3	B	9.4	23.3	5.2		8.4	24.6	35.9		9.3	40.5	28.7	B
9.5	21.2	16.8		9.4	1 6.1	48.3	B	9.4	29.6	4.5		9.5	48.0	13.9		9.5	48.2	40.7	
8.3	31.4	6.8	K	9.5	28.5	28.9		9.5	59.0	28.4		9.5	50 5.2	47.0		9.2	54.3	14.5	K
8.5	34.8	24.1	K	9.0	2 26.7	2.7	K	9.5	30 19.2	58.0		9.5	43.9	25.0		9.5	13 25.8	30.7	
9.1	33 22.4	23.8	K	9.5	33.8	19.2		9.5	35.6	55.3		9.5	50.8	55.5	B	9.5	40.5	42.4	
9.5	49.1	28.9		9.5	56.1	41.9		7.0	43.7	9.9	K	8.9	58.2	51.4	K	9.5	14 4.3	6.0	
9.2	34 47.2	49.0		9.4	3 20.2	4.8		9.3	31 17.5	30.8		9.5	51 8.2	14.2		9.5	51.2	18.3	
9.5	35 22.5	23.0		9.5	52.7	36.1		8.8	32 36.1	30.1		9.3	52 6.1	48.9		9.1	59.5	48.6	
9.4	23.7	44.0		9.1	4 16.6	39.2		8.7	39.2	2.0		9.3	10.0	33.2		9.4	15 24.8	47.3	
9.4	38.2	7.0		6.0	5 27.8	53.4	K	9.0	33 18.4	0.4		9.5	25.8	12.5		9.5	24.8	40.7	
9.5	36 36.0	1.8		9.1	29.7	59.5		7.0	28.2	16.7	L	9.4	53 55.4	57.0		8.9	38.5	4.2	R
9.4	40.0	7.2		9.5	6 9.5	29.5		8.5	36.9	29.5	K	9.5	54 58.2	53.2		7.7	45.7	50.0	L
8.5	37 15.3	24.7	K	9.5	7 48.8	44.6		8.7	40.2	10.9	L	8.5	55 8.9	35.0		8.3	59.2	18.0	L
9.5	38 17.8	49.8		9.5	57.3	29.8		8.2	34 47.3	2.2	K	9.5	9.8	8.7		9.4	16 3.7	57.8	
9.3	39 57.1	29.8	B	9.5	9 6.4	10.5		9.5	54.6	30.5		9.5	43.8	42.2		9.1	33.1	1.1	
9.3	40 7.9	4.7		9.5	52.5	36.3		9.2	35 46.1	11.2	K	8.5	54.2	7.3	K	9.2	58.2	16.2	
8.9	25.2	59.6	K	7.0	10 4.8	28.8	K	9.5	47.5	15.7		9.3	56 5.6	21.5		9.5	17 8.2	15.9	
9.0	36.4	37.6		9.4	9.4	44.9	B	9.5	36 25.6	44.6		9.0	24.9	54.6	K	9.5	10.3	19.0	
9.1	56.8	48.8		7.5	11 43.3	58.1	K	8.0	29.7	56.8	K	8.9	28.6	28.0		9.3	43.8	23.8	
9.5	41 9.8	15.4		8.8	12 13.7	1.1	K	9.5	46.6	19.0		9.5	57 51.9	56.6		9.0	56.5	38.6	
9.2	42 9.7	24.0	K	9.5	34.6	20.5		9.4	37 15.4	26.0		9.3	52.6	8.4		5.8	18 4.0	6.3	R

1301—1360				1361—1420				1421—1480				1481—1840				1541—1600			
	6ª		+23°		6ª		+23°		6ª		+23°		6ª		+23°		6ª		+23°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.5	10	33.0	19.3	L	9.5	19	8.5	42.8	9.5	27	30.7	35.1	9.5	35	51.5	43.3	9.4	46	24.8	57.8	
9.4		38.2	59.5		8.2		9.0	45.8	K	9.5		39.8	31.1		9.4	36	1.9	26.5		9.2		50.9	52.7	B
9.3		49.5	5.1		9.5		10.3	1.0		9.5		47.2	57.3		8.8		6.0	22.3	K	9.5		56.0	39.8	
9.4		52.0	20.8		9.5		18.8	30.5		9.5		52.2	43.8		9.4		30.2	50.3	B	9.4	47	2.3	3.4	
9.3		52.6	40.1		9.5		39.9	26.3		7.4		54.9	12.6	B	9.5		31.5	42.8		9.3		9.9	27.7	
9.3		59.3	53.2		9.3		42.3	9.3		9.5	28	30.7	35.9		7.6		33.4	47.5	L	9.1		24.5	42.8	
9.3	11	4.0	19.9		9.4		46.5	57.6		9.5		33.5	54.5		9.4		41.2	34.5		9.4		25.4	7.7	
9.5		6.2	47.6		9.5		58.4	40.2		8.7		50.6	37.8		9.4		41.3	53.4		9.5		53.2	26.3	
9.1		9.3	19.6		9.0	20	0.8	30.1		8.7		51.5	45.2	S	8.9		50.8	59.9		9.5	48	7.6	8.4	
9.4		10.0	53.5		9.3		3.9	1.1		9.5		59.9	23.0		9.2		53.3	50.9		8.8		24.5	32.4	
8.2		17.9	27.8	K	8.9		5.3	54.6		9.5	29	1.2	13.9		7.3	37	22.8	30.9	K	9.1		34.3	18.6	B
9.5		32.1	31.2		9.5		13.0	22.0		9.0		2.3	17.6		8.8		28.3	54.9	K	9.1		43.9	23 6	
9.5		35.8	19.3		9.4		24.3	4.7		7.3		4.5	43.3	L	8.4		50.0	58.8	K	9.5		45.7	56.1	
9.5		39.5	40.6		9.5		48.7	58.3		9.2		17.8	12.9		8.2	38	1.4	50.0	K	8.0	49	2.1	4.9	L
9.3		43.0	22.9		9.5	21	2.6	38.3		9.5		54.9	19.4		9.5		20.7	51.4	B	9.5		13.7	56.7	
9.5		55.3	30.2		9.5		14.3	53.0		9.1	30	3.2	11.4		9.5		54.5	46.6		9.4		15.6	22.1	B
9.5	12	15.6	41.6		9.5		18.2	33.8		9.3		10.2	28.6	B	9.5	39	5.3	3.1		9.3		45.9	49.8	
9.4		17.4	47.3		9.5		33.5	27.4		9.1		15.5	45.2		9.5		17.3	53.3		9.5		47.6	22.2	B
9.5		24.9	35.2		9.3		46.4	59.9	B	9.2		17.9	4.7		8.0		31.5	23.5		9.5		52.7	58.3	
9.3		30.6	40.1		8.7		50.6	37.7	K	8.9		32.2	34.0		9.5		38.1	19.3		9.5		55.6	30.3	
9.5		55.2	59.2		9.5		54.3	54.4		9.5		37.0	21.3		9.5		39.3	35.8	B	9.5	50	17.1	4.5	
7.7		58.4	49.8	L	9.2		59.6	40.2	K	9.5		49.9	24.5		9.5	40	3.2	35.9		8.5		40.5	17.3	K
9.5	13	28.2	10.3		9.4	22	0.3	54.1	B	9.3		52.9	25.5		8.8		8.8	53.1		9.5	51	7.7	23.8	
9.5		52.0	43.5		9.5		10.4	47.8		9.2		54.5	45.7		7.6		21.4	21.5	B	9.5		18.2	58.6	
9.5		52.2	12.7		9.5		41.7	35.5		9.5	31	2.3	7.7		9.5		24.8	38.7		9.5		51.2	15.2	
9.5		52.6	17.6		9.5		48.7	32.8		7.8		15.4	48.2	K	9.5		39.2	41.8		8.0		54.8	39.7	K
9.4	14	6.7	35.3		9.5	23	11.3	4.9		9.1		21.5	57.8		9.1	41	6.9	10.7	B	9.3		59.9	56.7	
9.5		8.0	20.9		9.2		24.4	54.7		9.0		26.8	4.9		9.5		21.0	9.4		9.4	52	1.2	8.6	
9.5		10.3	2.2		9.0		52.6	13.1	B	9.4		31.3	38.5		8.5		49.5	49.7	K	9.2		1.9	48.5	K
9.0		24.3	53.8		9.4		54.8	28.5		9.0		34.1	35.8	B	9.5		57.3	25.8		9.3		14.7	15.8	B
9.4		36.8	30.3		9.1		57.0	11.2		8.8		35.4	46.5	K	9.5	42	5.6	7.1		9.4		25.8	4.2	
9.3		41.3	8.0		9.4	24	11.0	22.6		9.5		37.9	32.4		9.5		20.3	35.0		9.4		38.5	38.8	B
9.3		43.4	31.0		9.5		13.3	37.3		9 0		42.4	2.3	K	8.5		34.5	32.0	K	9.5		52.0	42.8	
8.5		44.3	9.2	K	9.5		16.8	29.3		9.2		45.0	20.3		9.3		38.3	2.7	K	8.9	53	18.3	52.6	B
9.0		52.1	56.0		9.3		17.4	27.1		8.7	32	8.8	18.0	K	9.5		45.4	50.9		9.2		22.6	16.5	
9.2	15	12.7	33.2		9.3		24.3	53.5		9.3		12.5	32.4		9.5		55.5	25.2		9.3		45.5	58.9	
9.5		21.3	2.4		9.5		26.4	48.3		9.5		29.4	58.7		9.5	43	2.3	5.5		9.2		47.0	54.4	
8.7		45.8	29.7	K	8.5		39.5	16.8	B	9.5		31.1	4.2		6.5		12.2	47.2	K	9.5		49.7	33.8	
9.5		51.1	7.2		9.0		42.8	30.4	K	9.3		36.5	44.0		9.5		46.6	58.2	B	9.0	54	37.2	23.8	
8.6		53.2	43.6		9.5		51.7	35.6		9.3		50.6	21.2	B	8.9		52.8	11.6		9.2	55	6.4	17.2	
9.5	16	8.4	56.2		9.2		58.8	29.4	K	9.4	33	0.0	33.1		9.5	44	12.7	35.7		9.1		17.5	53.1	B
9.5		8.4	9.9		9.4		59.3	9.9		9.4		22.4	0.0		9.4		13.3	0.7		9.3		19.5	36.8	
9.2		9.9	55.0	B	9.0	25	15.3	9.4	K	9.3		23.8	28.0		8.9		30.5	23.8	B	9.5	56	1.0	47.3	
7.2		28.4	47.4	K	9.5		19.6	41.0		9.5		28.3	51.1		9.5		33.7	11.7		9.5		13.1	5.5	
8.5		33.3	8.2	K	9.5		23.3	51.3		9.4		44.1	15.5		8.9		37.3	18.5		9.5		14.7	59.9	
7.5		43.8	31.2	K	9.4		44.2	56.2		9.5		56.0	2.7		9.4		40.8	46.7		9.5		23.4	56.6	
6.8		44.9	23.8	L	9.0		48.1	18.7		8.2	34	7.0	21.4	K	9.1		52.6	42.9	B	8.9		24.0	54.6	K
9.5	17	7.9	5.5		9.2	26	0.8	29.2	K	9.4		24.5	44.6		9.5		55.8	15.5		9.5		29.0	32.8	
9.5		22.7	25.9		9.5		11.0	6.1		9.5		49.7	34.3		9.2		57.3	3.6		9.0		32.3	23.7	K
9.5		30.6	55.2		9.5		24.0	27.8		9.2		54.7	4.5		9.5		59.5	46.7		9.0		33.3	22.7	K
9.5		36.3	53.5		9.4		25.5	25.9	B	9.5		58.4	6.5		9.5	45	0.5	42.8	B	8.5	57	1.1	29.9	K
9.1		39.4	46.6		9.5		31.1	17.5		9.5		58.7	35.1		9.2		11.6	29.4		9.3		26.3	52.6	
9.5		54.3	2.9		9.5		59.9	25.4		9.3	35	3.0	20.8		9.0		37.2	9.1		9.5		41.8	49.2	
9.1		59.3	6.5	K	9.4	27	5.9	25.2		9.1		5.2	14.4		9.5		51.3	21.0		9.3		49.6	4.9	
9.5	18	5.7	57.9		9.3		8.8	3.7	B	9.3		5.4	27.0		9.4		55.1	4.2	B	9.2		50.8	43.3	
8.5		10.4	48.9	K	9.4		10.6	3.1		9.4		12.8	31.0		9.5	46	0.3	52.9		9.5		51.8	58.8	B
9.3		34.8	47.3	B	9.5		21.7	35.2		9.3		33.3	8.3		9.5		4.1	37.3		8.0	58	0.3	27.8	K
9.5		47.4	3.8		9.4		23.6	3.9	B	9.3		30.9	25.3		9.3		9.5	46.2		9.5		7.5	44.0	
9.5		56.2	14.4		9.5		25.2	36.7		9.5		36.9	22.8		9.5		12.9	19.4		9.5		9.8	7.6	
9.4	19	2.8	32.2		9.3		27.4	47.3		8.5		49.7	34.9	B	9.5		18.5	34.0	B	9.4		24.3	41.9	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	6ᵘ—7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ	+23°			7ᵘ—8ᵘ	+23°	
m		′		m		′		m		′		m		′		m		′	
9.3	58 23.8	9.1		9.5	8 56.6	59.8		9.4	19 24.7	42.5		9.1	32 42.6	4.4		9.5	45 57.4	56.0	
8.8	37.3	49.9		9.5	58.0	6.2		9.5	40.5	43.8		8.8	44.6	31.3	K	9.5	58.7	39.8	
8.8	37.8	35.4		9.1	9 3.3	54.4		9.0	46.0	9.9		9.1	44.8	8.2		9.1	46 49.6	0.6	K
9.0	42.0	2.4		9.3	11.5	55.6		9.3	50.7	51.2		9.0	52.6	51.6		9.1	58.0	8.2	
9.0	43.3	10.6	K	9.4	32.7	17.0	B	9.5	55.4	58.8		9.5	53.0	32.6		9.4	47 5.6	18.7	B
9.5	45.8	21.6		9.5	38.7	12.5		9.5	20 8.2	12.6		9.0	55.3	56.8	B	9.2	13.2	42.1	
9.0	50.0	26.4		9.1	42.9	43.7		8.7	9.5	6.9	K	8.5	58.1	25.0	K	9.5	15.8	23.0	
8.5	59 19.3	53.0	K	9.3	59.2	13.1	B	8.3	36.7	5.7	K	9.5	59.4	1.9		9.5	25.3	52.2	
9.5	43.3	5.4		9.4	59.4	10.1		8.7	55.3	21.9	L	8.3	33 2.6	51.1	L	9.5	38.2	5.6	
9.5	44.8	44.3		8.9	10 35.9	58.3	K	8.5	21 21.3	7.7	K	8.8	15.6	22.4	K	9.5	41.5	7.5	
9.3	57.0	59.4		9.5	54.3	32.4		9.5	25.0	57.1		9.5	18.8	37.4		9.3	48 6.2	5.5	
8.7	0 3.8	29.9	K	9.5	11 0.3	46.2		8.9	34.2	6.5	K	7.8	25.1	15.2	K	9.5	14.8	34.6	
9.5	9.0	52.5		9.5	14.0	2.0		9.5	51.8	23.5		9.5	43.0	36.4		9.0	31.0	22.9	
9.0	19.8	45.7		9.1	29.5	54.3		8.6	54.2	15.0	K	9.5	56 6	12.4		9.5	34.7	43.5	
9.5	24.5	12.0		9.2	30.6	51.3		9.4	22 13.2	58.2	B	8.3	34 20.8	36.1		9.5	49 23.8	46.4	
9.5	26.2	57.9		9.3	34.3	59.7		9.1	52.3	11.2		var	21.5	47.3		9.2	24.8	40.1	
8.3	30.0	52.8	K	9.5	38.0	46.5		8.3	23 2.0	57.6	L	8.5	28.7	53.2		9.5	32.0	25.9	
9.4	34.8	0.3		9.5	45.0	3.3		9.5	23.8	44.6		9.5	37.6	45.5		9.5	35.3	40.2	
9.5	35.5	17.0		9.2	49.1	11.1		9.5	26.7	37.4		9.0	55.0	2.5		9.4	54.4	49.9	B
9.4	37.8	36.8		9.5	59.5	6.9		9.1	37.8	30.8		9.5	35 40.4	57.6		9.5	50 4.6	20.0	
9.5	57.1	55.3		8.5	12 1.2	53.9	K	9.5	45.4	12.7		7.0	50.0	41.2	B	9.4	10.1	43.4	B
9.5	1 7.7	5.3		9.5	10.4	45.9		9.3	47.9	5.9		9.5	59.3	15.4		9.5	54.0	25.8	
9.5	11.8	9.1		9.5	42.3	58.1		8.8	24 10.0	46.4		9.5	36 1.4	29.5		7.3	51 4.6	34.9	L
9.5	15.1	55.0		9.5	59.0	2.5		6.0	11.1	12.3	K	9.4	17.8	37.3		8.2	8.3	27.3	L
9.5	24.3	9.0		8.8	13 0.7	30.9		9.4	11.7	14.1	B	7.5	20.6	20.9		9.0	36.9	28.9	
9.1	26.6	5.4		9.4	10.3	58.2		9.5	23.3	12.9		9.4	58.3	52.8		6.5	52 21.1	59.8	K
9.3	45.7	34.9		9.1	18.1	59.8		9.0	27.6	9.1	K	9.1	37 20.4	56.3		9.0	53 6.8	13.2	
9.2	47.8	35.5	B	9.5	18.6	5.2		9.5	31.2	58.5		8.0	28.5	53.9	K	9.1	7.4	28.0	
9.2	58.6	37.5		9.5	33.0	44.5		9.4	47.4	7.8		9.5	38 37.3	43.8		8.9	34.5	24.8	
9.4	2 0.4	15.2		8.5	45.3	13.7	K	9.5	25 15.7	53.8	B	8.5	50.6	29.2	K	9.5	54 5.8	2.3	
9.5	4.9	36.8		8.8	45.9	16.1	K	9.3	17.4	33.0	B	9.5	57.7	52.5		9.2	15.7	27.3	B
9.5	6.2	0.9		8.4	48.0	24.3		9.0	18.1	31.1	K	6.5	39 53.5	30.5	K	8.9	38.6	40.4	
9.0	15.8	19.0	B	9.5	50.8	41.8		8.8	35.7	38.7	K	9.5	40 3.8	48.2		9.3	45.8	28.7	
8.5	53.6	27.8	K	8.5	14 10.6	23.0	K	9.5	46.3	54.2		9.5	4.9	56.6		9.3	53.5	44.4	
9.4	3 6.1	3.1	B	9.0	26.5	4.8	L	9.1	47.0	6.4		9.3	9.7	10.7	K	9.3	55 4.1	42.5	
9.0	7.6	40.1	K	9.5	33.8	44.7		7.9	26 2.4	15.8	B	9.0	26.0	28.6	B	9.1	10.6	33.6	
9.5	21.4	55.0		9.5	39.7	29.5		9.4	14.4	48.4		9.5	41.6	10.0		8.5	20.0	47.7	
9.5	4 19.8	10.8		6.5	46.1	12.9	K	9.5	18.6	44.6		8.8	50.6	38.1		9.5	27.5	9.2	
9.4	27.8	23.4		9.5	58.7	48.7		9.4	23.1	11.2		9.4	41 0.8	50.2	B	9.5	40.5	6.2	
9.2	30.7	27.1		9.3	15 29.1	5.7		6.8	28.6	21.5	L	9.5	19.9	12.2		9.5	43.4	21.8	
9.5	38.3	11.6		9.5	29.5	21.9		9.4	43.0	43.8	B	8.0	28.5	5.7	K	9.1	44.1	41.3	
9.5	48.0	14.0		9.2	35.0	53.5		9.3	57.6	38.8		9.3	40.4	8.2	K	9.0	56 4.3	14.1	
9.5	5 2.0	28.0		9.0	39.1	41.2		9.5	27 24.8	42.3		9.5	44.5	16.3		9.5	25.2	57.0	
9.5	15.8	14.0		8.5	40.3	12.0	K	9.5	35.7	20.5		9.4	57.0	18.5		9.5	40.6	28.8	
9.5	28.0	21.8		9.5	45.8	14.1		9.5	37.4	12.7		9.0	59.4	24.3		9.2	54.6	48.1	
9.1	48.3	53.0		9.5	16 11.1	29.4	B	9.1	56.3	54.6	K	9.5	42 21.0	59.6		9.0	57 40.8	46.1	
7.8	6 8.6	19.9	K	9.5	20.2	4.9		9.5	28 50.5	56.8		9.5	37.6	30.2		6.0	42.9	2.9	K
8.3	26.3	29.5	K	9.5	32.8	44.2		9.5	29 1.3	32.1		8.9	51.7	19.5		7.5	58 22.0	9.7	K
9.5	38.4	22.7		9.5	17 7.3	14.2	B	9.5	28.8	12.6		9.0	52.4	46.1		9.5	33.1	12.0	
8.0	41.5	45.4	K	9.5	10.8	3.6		9.5	35.0	56.8		9.4	43 16.2	59.6		9.4	34.0	26.1	B
9.1	49.2	40.7		9.4	27.1	19.0		9.4	38.7	57.6	B	9.5	24.3	45.5		9.5	59 3.8	56.0	
9.4	7 23.6	12.0		9.4	31.7	19.9		9.2	41.8	7.5		8.4	44 8.9	52.2		8.5	14.6	11.9	K
9.0	48.1	43.3	B	9.2	34.7	58.5		9.1	57.9	50.2		9.5	14.6	22.0		9.5	32.1	12.0	
9.2	53.0	43.7	B	9.5	18 16.6	52.0		9.5	30 9.7	34.4		9.3	34.2	48.4		9.0	39.8	36.1	B
9.4	8 9.3	25.6		9.4	31.8	16.3	B	9.3	31 0.0	49.8		9.5	35.1	34.9		9.5	40.6	22.7	
9.3	24.6	40.6		9.4	33.9	40.2		9.2	37.7	11.2	K	9.3	45.8	28.5		9.3	0 41.0	59.5	
9.2	27.2	55.7	B	9.3	35.4	25.0		8.5	44.0	32.8	K	9.5	45 4.3	49.3		9.4	1 20.4	54.5	
9.5	27.7	48.7		9.4	38.0	23.8		9.5	55.7	51.7		9.5	5.8	3.8		9.4	52.5	28.7	
9.5	33.3	51.5		9.4	19 0.6	43.5	B	8.2	32 3.3	34.6	K	9 5	9.7	1.2		9.4	2 3.6	7.7	
9.4	52.0	11.2	B	9.4	19.6	15.3		6.0	17.6	21.9	K	8.6	33.3	52.9		9.5	17.0	27.0	

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	8ᵘ	+23°			8ᵘ	+23°			8ᵘ—9ᵘ	+23°			9ᵘ	+23°			9ᵘ—10ᵘ	+23°	
m				m				m				m				m			
8.1	2 19.8	9.5	K	9.5	19 16.0	19.5		9.5	49 11.1	54.8		9.2	13 22.0	25.7		9.5	36 0.0	3.1	
9.3	42.5	56.5		9.5	23.6	6.3		9.5	19.4	58.4		9.4	26.5	10.5		9.5	10.5	45.6	
9.1	51.3	31.5		9.3	54.1	31.6		8.3	28.7	31.2	K	9.5	31.4	2.8		8.8	42.4	57.2	
9.4	52.0	27.3		9.5	21 27.3	13.6		9.3	50 30.0	18.1	B	9.4	36.0	10.5		9.4	47.5	13.5	
8.3	54.0	54.3	K	9.2	51.5	6.5	K	9.5	31.5	21.3		9.5	48.0	6.6		9.0	48.9	27.7	
8.9	3 21.1	49.2		9.1	22 2.0	6.2	K	8.7	37.5	18.1	K	9.4	14 2.5	9.0		9.5	37 20.2	2.1	
9.0	44.2	59.7		9.0	10.8	58.5		8.0	44.5	21.3	K	9.1	17.1	11.7		9.0	38 49.1	17.7	
9.1	55.5	33.5		9.4	23.6	44.3		9.5	53.7	46.7		9.3	26.0	35.0		9.4	39 43.6	10.6	
9.5	4 17.6	26.0		9.3	24 16.5	49.4		8.0	52 6.2	1.9	K	9.0	27.3	55.7		8.0	40 43.6	14.6	K
9.5	35.9	57.3		9.5	24.9	55.0		8.3	8.5	17.1	K	8.7	15 21.8	26.7	K	9.1	53.0	57.6	
9.2	5 1.5	6.6	K	9.5	27.3	59.8		8.7	30.1	22.2	K	9.5	16 43.2	56.4		9.1	41 37.5	48.0	
9.5	5.3	58.6		9.5	59.5	22.9		9.5	53 16.3	5.5		8.0	44.3	24.4	L	9.5	50.5	10.4	B
6.5	7.2	35.2	K	9.1	25 59.6	43.7	B	9.2	54 39.9	39.7		8.9	49.7	37.2		9.5	59.4	40.1	
9.2	12.1	12.9		9.0	26 48.0	12.3		9.5	52.8	48.7		8.9	17 7.2	13.0	K	8.0	43 50.3	40.8	B
9.2	36.6	26.9		9.4	27 1.5	7.1		7.3	55 2.4	11.2	K	8.8	21.5	15.3	K	9.5	55.1	0.5	B
9.4	50.7	3.9		9.5	10.8	21.2		9.5	18.3	0.9		8.8	50.8	15.4	K	8.0	44 41.8	17.8	K
9.5	55.0	14.2		8.8	42.9	58.0		9.3	24.0	48.4		9.0	18 2.3	15.7	K	9.5	46 21.7	22.9	
8.6	6 12.8	9.1	K	8.6	28 26.5	45.0	K	9.5	26.5	57.7		9.5	19 20.5	25.0		9.4	48.5	41.2	
9.3	7 0.6	46.0		9.3	44.3	3.0		9.4	56 36.0	2.1	B	8.2	26.9	57.5	K	9.5	47 2.1	54.4	
9.5	18.4	5.5		9.5	29 28.5	37.1		7.0	38.4	26.3	K	9.0	27.2	27.4		8.8	37.9	19.1	K
9.4	23.0	52.3		9.5	37.5	47.4		8.5	57 9.3	38.1	K	8.0	29.8	36.4	L	8.7	48 22.0	49.4	B
8.7	54.5	12.9	K	9.4	45.1	1.9	B	9.5	18.2	5.5		8.0	42.8	54.5	K	9.0	49 17.7	3.3	
9.0	57.0	1.1		9.5	30 17.5	8.5		9.3	45.1	32.6		8.8	20 11.3	45.0	K	7.5	59.9	22.5	K
8.5	58.2	21.5	K	9.5	22.0	23.9		9.4	58 15.3	40.2		9.5	22 41.5	0.2		8.2	51 15.5	57.6	K
8.3	8 25.0	11.9	K	9.0	46.9	18.5	K	8.2	38.2	55.2	K	9.0	52.1	50.5		9.0	26.6	21.9	
9.3	42.3	1.0		9.5	31 51.0	36.4		9.5	51.5	8.5		9.5	59.8	24.7		9.5	32.1	57.0	
9.3	45.5	26.0		9.5	51.8	16.1		8.4	56.3	27.4	K	4.5	23 26.2	53.6	K	9.0	52 0.2	42.9	
9.3	47.5	14.8	B	9.2	57.1	57.7	K	6.5	59 5.2	33.6	K	9.1	58.5	53.6		9.3	27.8	9.0	
9.5	9 9.5	51.2		9.5	32 17.5	33.3		7.8	32.7	2.4		9.5	24 2.0	33.2		9.5	53.7	33.2	
9.5	12.3	16.0		9.2	33 1.6	21.3		9.0	58 0	57.4	K	9.5	15.5	56.1		9.1	53 17.1	25.3	
9.3	57.6	37.2		9.3	21.5	46.0		9.0	0 3.9	29.5		9.5	35.0	57.7		9.5	37.3	4.4	
9.0	10 56.0	45.5		9.2	48.4	29.2	K	9.5	24.2	44.4		9.3	25 53.1	18.0		9.3	43.2	42.5	
9.5	11 32.1	48.0		9.5	53.8	47.4		9.4	1 28.2	19.9		9.4	54.7	23.4		9.4	54 21.6	11.8	
9.5	12 8.3	20.0		9.3	34 51.7	2.1		9.5	36.2	6.8		9.5	26 54.4	58.7		8.8	44.8	22.2	
9.5	26.0	31.8		8.2	35 18.9	13.8	K	7.9	37.0	15.8	K	9.5	59.1	0.8		9.5	55 40.0	54.0	
9.5	26.1	40.8		9.5	51.0	9.5		9.5	2 1.5	33.7		7.5	27 48.1	50.3	K	7.8	56 31.1	16.0	K
9.5	44.2	54.2		9.5	36 25.4	39.6	B	9.1	11.9	8.6		9.4	59.9	59.4		9.0	59 27.8	25.7	
9.5	46.0	49.2		9.4	25.8	54.0		9.4	52.3	43.0		9.0	28 31.0	56.3		9.4	59.5	52.0	
8.2	13 19.0	25.0	K	9.0	39 7.0	37.1		9.0	3 1.9	41.9	K	9.4	41.5	1.3		9.5	0 30.8	5.4	
8.5	27.3	33.3	K	8.7	58.9	56.1	K	9.0	49.2	24.0		7.0	42.8	41.4	K	9.3	1 21.1	8.5	
8.9	36.8	58.5		9.5	40 33.5	29.8		9.5	5 42.8	28.5		9.1	58.1	21.2		9.5	2 6.3	46.3	
9.5	14 2.0	12.6		9.5	41 34.7	18.5		7.8	6 33.0	18.8	K	9.2	29 12.1	34.6		9.1	3 13.8	59.1	
9.5	29.5	54.0		9.5	42.0	25.4		7.5	49.1	57.8	K	9.2	14.2	40.6		9.4	35.8	48.3	
9.1	52.8	38.5	K	8.5	42 0.3	40.1	K	9.4	50.9	42.0		9.3	44.0	10.2		9.5	54.9	10.8	
9.4	15 11.6	45.3		9.3	53.8	22.3		9.0	53.6	57.5	K	9.0	50.5	36.7		9.3	58.2	41.8	
9.5	17.1	38.4		9.5	43 18.9	18.1		9.4	59.8	37.0	B	7.8	30 21.6	42.8	K	8.8	4 20.9	4.9	
9.4	35.5	45.3		9.2	22.8	59.2		7.8	7 5.3	24.1	K	9.0	25.1	8.8		9.3	34.5	42.9	
9.3	38.0	40.5		9.0	44 30.4	51.3		7.9	8 18.9	30.9	L	8.8	28.5	37.1	K	9.5	44.6	53.9	
9.4	16 55.6	13.0		8.5	41.5	15.4	K	9.5	40.3	42.3		9.5	31 10.6	57.2		9.1	48.8	9.8	
9.1	56.7	32.7		9.5	45 19.5	23.3		9.5	9 5.1	52.6		9.1	24.1	30.1		8.3	5 1.5	34.3	K
9.5	17 10.5	19.0		9.1	28.5	18.1	K	9.5	7.7	56.3		9.4	44.9	0.4		9.5	11.5	25.7	
9.5	22.2	45.8		8.5	46 0.6	34.1		6.5	27.2	41.3	K	9.5	32 26.5	10.1		9.4	33.0	18.8	
9.5	32.1	11.2	B	9.4	24.5	20.6		9.4	10 17.7	0.9		9.1	46.1	59.2		9.5	37.0	14.5	
9.4	37.1	25.5		9.5	56.0	36.7		8.6	33.8	30.9	K	9.5	55.2	9.5	B	9.3	55.9	56.1	
9.2	45.8	25.8	B	8.5	47 36.4	37.1	K	9.3	11 16.3	24.0		9.0	58.1	20.1	K	9.5	58.0	10.6	B
9.3	18 19.5	51.8		9.1	44.7	47.6	B	9.5	23.1	13.0		9.4	33 21.0	14.1		8.9	6 5.7	29.1	
9.3	26.0	57.0		9.4	45.2	49.7		9.5	26.4	0.2		9.3	24.5	13.0		9.3	41.3	43.0	B
8.7	27.7	50.5		9.2	51.6	53.5		8.2	12 23.8	15.8	K	9.1	38.3	32.8		9.5	7 6.8	51.5	
9.5	42.8	7.1		9.5	48 31.1	35.3		7.9	13 4.0	31.0	K	8.0	48.2	58.1	K	9.3	11.9	50.2	B
7.8	54.3	37.5	K	9.2	34.2	54.8		7.8	19.8	22.7	K	9.5	35 4.2	14.4		9.2	20.5	8.8	

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	10ᵘ	+23°			10ᵘ—11ᵘ	+23°			11ᵘ	+23°			11ᵘ—12ᵘ	+23°			12ᵘ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	7 27.1	31.5		8.0	39 25.8	20.6	K	9.5	7 23.7	8.6		9.2	37 17.3	2.3		7.7	10 0.8	0.5	K
9.1	8 35.9	39.0		9.0	47.7	21.7	K	5.0	29.6	53.4	K	9.0	26.1	18.6		8.8	32.9	39.1	K
9.4	50.0	2.1		9.1	53.9	37.5		9.1	31.8	0.5	B	9.2	38 26.6	10.6		9.4	40.0	5.3	
9.1	52.8	12.4		8.5	41 47.0	35.8	K	9.2	40.9	0.1	K	9.5	39 11.1	43.8		8.9	48.1	6.7	
9.2	56.7	26.8		7.8	59.1	56.6	K	9.5	8 16.3	34.0		9.0	14.4	15.0	B	8.5	50.9	30.4	K
9.5	9 10.1	32.4		9.5	42 0.7	44.0		9.3	40.5	23.9		9.4	22.2	6.4	B	9.5	11 6.4	50.3	
6.5	16.1	50.3	K	9.1	30.7	19.6		9.0	9 5.9	3.6	K	9.5	58.5	19.1		8.5	17.1	56.1	K
9.1	24.4	4.7		9.5	43 20.2	43.0		9.4	16.3	15.2		9.1	40 4.5	47.4	B	6.3	59.8	50.4	K
8.5	22.8	57.6	K	9.1	48.5	39.9		8.1	43.7	36.8	K	9.4	12.8	41.4		8.3	12 4.9	20.8	
9.5	10 37.9	29.8		9.5	50.7	45.4		9.5	11 45.0	6.7		9.1	29.3	39.4		9.4	22.0	16.3	
9.5	42.8	16.3		9.0	44 49.0	57.6		8.9	12 11.6	49.9	K	9.4	41 9.7	58.4		8.0	13 23.5	42.8	K
9.3	11 31.0	20.4		9.4	59.6	32.0		8.8	18.5	39.1		9.0	59.8	18.1	K	9.5	44.4	47.1	
7.9	37.1	14.0	B	9.4	45 1.5	20.8	B	9.4	27.6	32.5		9.5	42 9.5	15.4		8.4	15 5.9	16.2	B
9.1	13 43.6	31.3		9.2	23.2	2.7		9.5	50.5	50.3	B	9.0	43 23.3	43.6		9.4	6.5	12.9	
9.4	48.0	54.9		9.4	44.7	24.2	B	9.2	56.1	34.7	B	9.5	25.5	2.1		9.0	29.2	39.1	K
9.3	14 27.3	33.3		8.7	46 41.7	43.0	K	8.5	13 2.3	40.9	S	8.5	33.8	32.6	K	9.5	16 10.9	39.1	
8.8	15 3.2	56.7		7.3	47 41.5	56.2	K	9.0	14 10.0	28.6		9.0	44 39.9	14.7		9.5	17 41.4	20.8	
9.5	16 12.3	32.5		9.5	48 4.3	30.3		9.0	34.0	51.3		9.5	45 2.1	55.6		8.3	46.5	44.8	K
9.5	28.8	45.3		6.2	28.1	7.9	K	9.2	37.8	37.5		9.0	3.7	31.5	L	9.5	19 9.4	28.6	
9.2	17 31.2	56.1		9.5	45.0	32.6		9.2	51.4	38.1	R	9.3	21.4	32.5		9.3	13.1	54.6	B
8.7	39.9	50.1	K	9.5	55.5	1.9		9.3	15 5.3	27.1		8.9	58.3	42.5		9.3	24.1	50.3	
9.5	40.5	59.8	B	9.5	49 46.8	30.6		9.1	11.0	16.5		8.6	46 31.7	26.7	K	9.5	41.4	35.5	
9.0	18 11.8	27.0		9.5	52.3	43.3		9.5	16 12.9	46.3		9.5	48 13.9	48.4	B	9.3	20 49.6	56.7	
9.4	23.1	13.3		9.5	50 2.3	13.7		9.5	37.9	40.0		8.2	14.0	26.8	L	9.4	21 51.2	56.1	
9.5	46.2	10.8	B	9.4	40.4	10.1		9.5	56.5	39.6		9.1	19.3	28.9	L	8.3	23 4.9	12.9	K
8.9	19 9.2	57.2		9.3	51 7.2	55.7		9.5	17 28.8	27.5		9.5	49 1.2	31.8		8.2	9.7	41.0	B
8.7	12.2	30.3	B	9.3	51.7	36.8		9.0	18 4.0	39.2		7.8	50.3	26.8	K	7.4	24 30.5	45.6	K
9.4	15.0	36.5	B	8.7	52 1.7	43.7	K	9.2	18.9	0.2		8.3	52.6	47.0	K	9.3	31.0	19.6	
9.4	21.4	4.5		9.4	1.7	13.1	B	7.0	30.3	31.3	K	9.5	50 38.7	14.4		9.2	39.5	21.2	
9.0	41.1	41.7		9.4	8.6	51.7		9.2	20 9.4	49.5		9.5	51 59.4	52.5		9.5	56.9	10.8	
9.4	20 7.8	14.2		9.4	31.5	10.9	B	9.3	17.1	36.6	B	8.3	53 0.0	20.9		9.0	25 29.9	48.7	K
9.5	24.8	52.2	B	9.5	33.8	28.9		9.5	28.1	18.3	B	9.5	52.7	55.3		9.5	26 4.4	11.8	
9.5	54.7	10.8		8.8	53 41.9	18.0		8.2	30.2	59.3	B	9.0	58 11.7	33.2		9.5	15.9	17.2	
9.3	21 22.4	48.1	B	9.4	45.2	21.5	B	9.3	22 30.0	47.6		9.3	21.6	58.7		9.5	43.9	21.8	
9.3	23 12.8	10.6		9.2	47.7	47.1		9.0	30.9	24.8		9.5	59 22.8	55.0		4.8	27 37.4	25.9	K
9.0	24 13.3	10.9		9.5	55.7	2.3	B	8.8	23 9.6	3.8	K	9.2	45.4	3.6		8.3	43.5	56.6	K
8.8	14.4	21.9		8.5	54 16.3	22.3	K	9.1	44.7	30.0		7.0	0 5.1	51.3	K	9.3	28 42.1	4.0	K
9.5	25 8.2	47.8		9.5	34.9	4.2		7.5	45.6	37.6	K	9.5	23.3	50.8		9.4	30 54.9	26.3	
8.8	18.8	34.6		9.3	58.3	18.5		9.4	24 12.8	27.9	B	9.5	25.0	44.6		7.0	31 49.4	26.7	K
9.5	41.5	13.0	B	9.0	55 9.7	48.6		9.0	18.6	37.2		9.0	45.5	2.3	K	9.4	32 18.9	33.9	
8.6	57.3	33.3		9.0	12.4	54.8		8.0	26 45.6	41.1	K	9.4	1 17.2	30.9		9.4	26.7	21.9	
9.5	28 41.3	22.2		9.4	50.6	54.4		9.5	27 12.4	3.8		8.7	2 8.7	55.6	K	9.5	59.8	6.0	
9.5	30 19.5	6.3		8.2	56 10.4	56.6	K	9.5	23.9	58.2		7.3	36.3	26.7	K	9.3	33 11.8	49.0	K
9.5	26.7	58.8		9.5	12.6	46.3		9.3	40.3	37.5		9.4	42.9	1.2	B	9.3	27.9	46.6	K
9.4	34.8	30.1		9.3	14.9	49.6	B	8.5	29 2.6	11.8		9.5	3 31.2	24.6		9.5	42.3	39.1	
9.4	31 26.8	12.7		8.5	58 3.7	27.8	K	9.5	50.1	23.5		7.5	35.2	39.8	K	9.1	42.9	24.2	
9.5	34.8	41.5		9.5	59 29.6	28.1		9.3	30 41.1	44.4		9.3	39.8	43.6		9.5	56.0	49.0	
9.5	35.9	7.7		8.0	0 9.0	46.3	K	9.3	31 0.8	12.0		8.7	48.7	56.7	K	9.5	34 19.8	57.2	
9.5	32 10.3	25.4		9.3	39.7	27.4		9.5	11.9	34.8		7.5	57.8	24.0	L	9.5	35 52.2	59.2	
9.5	11.5	44.4	B	8.8	1 8.5	42.3	K	9.0	32 11.4	53.2		9.5	4 27.5	38.0	B	9.3	37 7.6	47.8	B
9.5	33 57.8	39.8		9.3	25.1	52.4		9.4	21.6	10.2	B	8.3	38.7	54.0	K	8.8	39 44.9	15.0	K
9.1	34 5.9	13.3		9.5	2 4.3	42.0		9.5	22.4	57.6		9.1	5 44.4	26.6	K	7.9	56.5	22.9	K
5.5	35 31.8	57.2	K	7.5	36.3	29.2	K	8.8	33 3.5	10.6		8.0	6 22.5	41.5	K	9.4	40 14.9	52.7	
9.2	36 21.0	39.5		9.4	3 21.5	53.2	B	9.5	34 5.6	12.7		9.4	56.1	38.8	B	7.6	43.6	30.6	B
9.5	22.0	26.3	B	9.5	22.3	42.0		6.5	34.6	1.1	K	9.5	7 24.2	54.2		9.5	54.8	4.7	
9.5	47.6	35.6	B	9.4	4 15.0	37.5	B	9.4	35 28.6	12.6		8.7	53.1	3.1		9.5	57.4	54.2	
9.3	38 30.5	55.7		9.3	38.3	24.7		9.5	40.6	14.4		9.5	8 35.4	34.1		9.5	41 43.3	54.8	
9.0	32.8	39.5	K	9.5	5 52.8	12.7		9.5	53.4	2.8	B	8.5	9 8.9	13.2	K	9.3	52.9	48.6	K
9.0	39 18.9	0.1	L	9.3	6 1.6	59.6		9.5	56.4	4.6		9.4	40.7	28.8		9.5	42 21.8	44.2	
9.4	21.2	4.0		9.3	22.2	44.8		8.6	37 2.0	10.6		9.2	41.0	27.6	B	8.9	27.0	55.3	K

2501—2560				2561—2620				2621—2680				2681—2740				2741—2800			
	12ᵃ—13ᵃ	+23°			13ᵃ	+23°			13ᵃ—14ᵃ	+23°			14ᵃ	+23°			14ᵃ—15ᵃ	+23°	
m				m				m				m				m			
9.4	42 48.7	51.0	B	9.0	12 43.4	49.7		8.8	44 3.0	51.1		9.5	13 11.4	5.6		8.7	42 30.1	46.8	B
6.5	43 6.5	39.4	L	8.5	14 6.5	13.6	L	9.1	5.5	48.7		9.1	30.9	42.0	R	9.4	38.6	46.8	
9.5	14.5	9.0		9.5	56.6	7.4		8.0	45.3	28.8	K	9.5	31.0	50.9		9.4	51.4	49.2	
9.0	30.0	53.7	K	8.0	59.0	4.3	K	9.0	45 51.9	57.5	K	9.5	14 47.5	7.6		7.0	43 11.7	38.2	L
9.1	37.4	1.0		9.0	16 43.3	18.0	K	9.5	46 12.0	6.3		9.5	15 9.2	31.0		9.3	52.7	50.8	K
8.8	44 6.4	48.4	K	9.5	17 4.9	42.5		9.4	13.8	38.9		9.5	16.8	8.0		9.5	58.2	51.2	
9.4	24.5	2.8		9.5	33.8	20.8		9.3	15.8	22.9		9.1	16 15.2	52.9		7.9	44 15.3	30.6	K
9.5	38.0	19.4		8.3	36.7	57.3	K	9.0	26.7	29.0	B	8.9	28.5	17.6	B	9.4	45 27.2	26.4	
9.5	47 18.4	59.0		8.8	19 45.4	34.2		9.5	47 17.8	29.7		9.5	43.2	20.1		8.2	46 14.7	57.3	K
8.8	48 38.6	10.0	R	8.4	45.4	4.4		9.3	48 6.4	48.9	B	9.0	17 21.2	11.7	K	9.5	47 15.9	28.2	
9.4	49 35.6	36.4		8.4	20 15.9	42.8	K	7.3	49 2.8	24.3	K	9.3	48.2	43.0		8.5	22.4	56.2	K
9.5	49.6	51.2		9.5	47.1	32.9	B	9.3	56.0	4.1		8.5	18 8.7	19 6	K	9.1	48 41.8	58.7	K
9.2	50 42.8	39.5	K	9.5	21 20.2	40.8		9.3	50 53.9	9.6		9.5	19.0	35.8		9.5	49 34.3	22.0	
9.2	51.8	37.2	K	9.5	20.3	24.9		9.5	59.4	33.5		8.4	19 15.9	29.4	L	9.5	52 20.8	33.5	B
9.3	51 31.0	46.7		7.5	23 36.4	16.7	K	9.3	51 1.7	4.2		9.5	52.7	30.5		9.1	24.4	12.7	
8.3	40.6	1.0	K	9.4	24 24.9	51.5		8.8	51.8	34.5		9.3	20 36.1	27.0		9.3	53 4.7	43.0	K
9.5	46.5	43.6		9.2	25 10.3	10.1		9.4	52 12.8	12.5		9.4	43.0	18.0		9.4	38.9	15.1	
9.5	52 36.7	6.6		8.0	19.4	55.6	B	7.8	23.3	9.2	K	8.6	46.6	22.0	K	9.1	43.9	14.2	K
8.5	46.1	32.6	K	9.4	25.8	7.0		9.2	23.7	26.3	B	9.5	22 41.3	40.5		9.4	48.4	1.5	
9.0	52.5	56.1		9.1	36.9	15.2		9.0	34.8	34.5	K	9.4	23 10.0	27.3		9.5	55 7.0	33.2	
9.2	53 26.1	24.3		9.1	46.3	13.9		9.0	54.0	35.2		9.4	11.6	40.1	B	9.5	37.0	1.2	
9.5	44.0	29.9		9.3	51.3	26.3		8.5	56.9	38.6	K	9.4	17.5	52.1	B	9.5	56 13.3	2.1	
9.0	54 12.8	29.1	K	9.5	26 11.2	54.2		9.2	54 45.5	54.9	K	9.5	23.9	14.5		9.5	57 22.9	9.4	
9.3	31.7	50.0	B	8.8	26.9	45.9	S	6.5	56 36.3	11.9	K	9.5	24 17.7	9.0		8.8	53.8	44.1	B
9.3	34.8	55.0		8.6	53.9	27.0	L	9.5	57 15.8	14.7		9.5	25 15.8	29.6		9.5	58 7.3	53.5	
9.3	40.7	35.7	B	9.1	27 45.8	47.4		9.5	37.3	48.0		8.6	26 35.7	33.7	K	9.3	16.3	47.6	
9.4	52.4	58.2		6.5	28 21.9	14.6	K	7.3	58 57.8	26.3	K	9.1	47.8	0.7		9.3	25.9	34.5	
7.5	55 33.8	44.7	K	7.5	31.5	33.0	K	9.4	59 4.6	54.3		9.0	27 2.9	48.7	L	9.3	27.4	9.7	
9.5	46.7	3.5		9.0	29 55.5	30.4		9.5	0 15.3	42.1		9.1	49.2	14.5		9.3	43.1	32.9	
6.7	55.3	25.1	K	9.5	30 53.9	47.4		9.1	18.6	54.5		6.3	29 33.7	53.2	R	9.5	58.1	37.4	B
7.0	59.6	58.9	K	6.5	31 9.9	15.6	K	8.9	31.8	50.9		9.0	48.3	37.5		9.5	59 25.0	21.9	
8.8	56 58.5	4.2		9.5	47.3	42.0		8.7	39.3	9.4	L	9.5	30 12.5	57.5		8.5	25.3	14.9	K
9.5	57 4.6	11.5		8.4	49.5	27.7	K	8.3	1 33.8	15.6	K	9.5	41.2	58.8	B	9.1	28.8	55.9	K
9.5	49.5	7.4		9.5	54.3	41.8	B	9.5	2 9.3	25.1	B	9.5	56.3	43.3		9.4	0 18.4	9.3	
9.2	58 44.7	40.6	B	9.5	32 46.6	18.0		9.5	15.3	52.5		9.5	31 32.4	43.3		7.6	48.5	7.6	B
8.8	54.1	43.8	K	9.3	47.5	4.1		9.5	22.6	28.9		9.3	32 49.0	32.0		7.3	50.8	28.6	K
6.5	59 18.6	3.1	K	8.9	33 21.1	12.0		8.5	59.4	51.7	K	9.2	33 5.3	27.9		9.5	1 18.7	47.5	
5.8	20.6	24.4	K	9.1	24.7	15.3	K	9.5	3 5.3	25.6		9.5	34 12.7	55.6		8.9	2 27.3	32.9	
9.3	0 12.5	13.7	K	9.5	30.2	25.2		9.3	4 6.8	9.4		9.2	21.1	31.5		9.4	52.9	5.8	
9.4	54.3	54.3		5.5	34 13.9	16.6	K	9.1	32.8	30.8		9.3	37.1	58.2		8.7	53.2	21.5	L
8.9	1 41.6	44.8	B	8.0	35 14.4	21.8	L	8.1	33.1	21.6	K	9.0	47.7	56.2	K	9.2	59.4	5.1	B
9.1	2 20.4	0.0	K	9.3	36 10.9	52.1		7.5	5 54.3	4.1	K	9.5	35 15.3	21.0		8.5	4 12.7	12.3	K
8.8	4 54.9	58.6	B	9.4	15.5	37.4		9.5	59.8	13.2		9.5	35.2	19.0		9.2	5 18.4	59.5	
9.3	56.0	59.2		9.5	27.5	9.2	B	9.0	7 2.8	21.2	L	9.4	36 2.6	21.0	B	8.6	25.3	35.6	
9.4	57.0	56.9		8.7	44.4	39.3	L	9.2	20.9	53.3		9.5	13.0	22.5		9.5	48.7	52.0	
9.2	58.1	40.9	B	6.3	54.9	25.6	K	9 3	24.3	6.8		9.2	40.8	22.8	B	9.5	6 34.7	22.5	
9.4	5 20.0	37.1		9.5	38 0.0	8.7		9.5	8 0.8	50.0		9.3	42.5	33.0		9.1	44.9	2.4	
9.0	29.1	41.3	K	9.3	4.7	56.6		8.9	7.8	29.7	K	9.2	37 5.2	35.0		9.5	7 0.9	3.9	
9.3	6 32.2	17.8	K	9.4	39.5	27.5		9.4	52.6	0.3		8.7	34.3	23.0	K	6.4	8.3	31.7	K
9.5	7 0.0	14.7		9.5	50.7	3.9		9.4	9 13.8	39.4		8.9	35.2	26.4	K	9.4	53.2	45.0	
8.4	8 3.2	49.2	K	8.4	54.2	15.2	K	8.4	55.1	21.8	K	9.2	38 4.3	0.5		8.0	9 4.4	5.0	K
9.5	50.7	7.3		9.5	39 56.5	38.7		9.5	11 15.6	58.5		9.4	39 36.4	30.3		9.1	14.4	59.6	B
9.5	9 6.9	39.6		7.8	40 1.2	16.0	L	9.5	18.7	47.6		9.5	53.2	35.5		9.4	43.9	51.8	B
9.5	47.4	18.3		9.3	8.3	33.9		9.5	24.0	13.8		9.5	40 28.5	55.0		8.8	10 21.7	58.3	K
9.3	10 12.4	20.8		8.6	41 20.9	31.9		9.5	31.2	3.9	B	9.3	38.8	1.7		9.4	11 1.8	21.3	
8.5	36.3	26.4	K	9.0	54.5	13.7		9.5	12 0.8	21.0		8.3	41 37.2	34.3	K	9.4	26.2	4.3	
9.4	11 23.7	48.5		9.5	42 4.6	25.2		8.4	1.1	44.0	K	7.7	53.3	1.0	K	9.5	12 16.1	27.9	
9.4	33.1	50.8		8.8	14.1	0.5	K	9.4	21.7	35.8		9.5	42 1.6	57.8		8.6	56.4	46.2	L
9.0	12 28.1	32.9		9.1	43 36.8	31.1		9.5	37.8	57.1		9.0	24.6	41.7		9.4	13 23.5	19.3	
8.3	29.8	34.9	K	8.8	41.5	45.6		9.5	46.1	58.1	B	8.9	29.0	42.4		9.2	30.5	18.2	

2801—2860					2861—2920					2921—2980					2981—3040					3041—3100				
	15ᵘ		+23°			15ᵘ—16ᵘ		+23°			16ᵘ		+23°			16ᵘ		+23°			16ᵘ—17ᵘ		+23°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.2	13	53.5	33.4	L	9.0	42	11.6	7.3		9.5	12	38.9	22.6		8.6	37	20.2	27.3		9.1	58	10.1	16.7	K
8.7	14	4.9	5.2	K	7.0		36.9	42.2	K	9.5	13	9.7	27.7		9.5		29.2	51.0		9.3		13.3	7.7	
9.2		24.1	38.5		9.3		55.3	9.2	B	8.9	14	57.8	58.7	K	9.1		38.2	31.1		9.5		54.8	48.0	
8.2	15	0.3	43.0	K	9.3	43	22.8	10.5		7.7	15	3.9	19.5	B	7.0	38	5.1	46.9	K	9.3		57.1	33.4	B
9.4		3.5	6.9		9.4		36.1	42.0		9.5		7.0	58.4		9.5		34.7	41.8		9.3	59	10.7	36.4	
9.2	17	30.4	39.9		9.1		38.2	55.7		9.0	16	37.1	24.9	K	9.5		35.0	48.7		9.5		31.4	38.0	
9.5	18	10.2	19.3		8.5		54.8	36.8	L	9.5		56.1	58.0		9.5		50.9	8.0		9.5		49.2	18.2	
8.5		22.4	47.5		9.5	44	32.6	40.6		9.4	17	39.6	53.9		9.5		55.5	16.7		9.4		49.3	20.9	
9.4		56.9	5.9		8.9	45	22.7	52.0		8.8		42.2	8.9		9.5		58.5	29.8		9.4		51.6	37.2	
9.3	19	3.7	9.6		9.0	47	4.8	43.0		9.3	18	38.8	59.2		7.3		58.5	59.5	K	7.7		59.7	31.4	L
7.9	20	58.4	56.9	K	9.0		44.8	23.1	R	8.3		47.5	8.5	K	9.4	39	48.7	41.9		8.6	0	41.2	45.7	B
9.5	21	27.9	53.4		8.7	49	40.2	53.6		9.5	19	29.6	50.5		9.5	40	8.2	17.7	B	8.5	1	5.1	36.0	K
9.3		34.3	49.2	B	9.5	51	27.2	47.5		8.7	20	8.2	13.9	K	9.4		8.8	40.4		9.5		5.4	41.2	
9.5	22	11.8	56.0		9.4	53	30.5	57.4		8.2		8.6	24.6	K	9.0		13.0	49.2		9.5		36.3	27.4	
9.1		28.5	36.5		9.5		34.3	9.1		9.5		28.2	44.6		9.4		16.8	50.7	B	9.5	2	9.2	50.1	
9.5		36.6	7.3	B	7.3		46.3	25.5	K	9.5		59.5	57.6		8.8		39.4	35.9		9.5		16.2	34.6	
9.5		39.8	27.5		8.9		48.4	8.0	K	9.1	21	21.1	14.3	K	8.8	41	15.1	15.3	K	9.5	3	6.3	12.9	
9.4		58.4	17.2		9.2	54	0.8	18.9		8.0	22	48.1	13.2	L	8.8		17.2	28.4	K	7.9		35.0	45.3	B
8.3	23	15.2	48.8	K	8.5		41.7	15.4	L	8.5	23	17.0	56.4	L	9.1	43	23.4	2.7		9.5	4	5.9	17.7	B
9.5		57.4	59.8		8.8		48.1	12.6		8.8	24	5.1	35.3	K	9.5		54.2	37.2		9.5		27.5	44.2	
9.1	24	10.4	25.7		9.3	55	4.6	29.2		9.5		43.3	9.0		9.4	44	3.7	35.9	B	9.5	5	8.9	38.8	
8.5	25	10.9	2.5	K	9.4		12.8	29.9		9.4	25	2.0	11.7	B	9.2		23.2	30.2		9.5	6	33.5	15.2	
7.3		40.7	4.5	K	9.3		17.8	11.8	B	9.4		11.6	36.0	K	8.9		23.9	44.6		9.3		48.8	19.2	B
8.8	26	3.8	30.5		9.2		21.7	35.2	B	9.0		44.1	31.8	K	9.4		57.6	45.3		9.4	7	20.7	54.4	
9.5		12.5	31.6		9.4		30.0	29.9		9.3		51.9	3.0	K	9.1	45	20.7	33.5		9.0		46.9	29.3	K
9.5	27	6.7	52.7		4.6	56	3.5	12.3	K	8.5	26	23.0	32.8	K	7.5		28.1	52.8	L	9.0		50.8	5.2	
9.0		19.4	41.3		7.6		30.1	11.8	K	9.2		30.2	49.2	B	9.1		38.2	42.2		9.3	8	16.0	48.3	
7.7		23.9	55.3	L	9.5		37.0	20.3		9.4		31.2	54.4		8.3		41.9	52.9	K	9.5		33.5	21.4	
9.1		48.9	2.0	K	9.5		50.2	34.7		8.1		37.2	28.1	K	9.2		58.2	53.6		9.2	9	8.1	7.5	
7.6	28	3.4	42.2	K	8.5	57	18.6	10.2	K	9.2		38.5	34.6		9.4	46	7.1	18.5		7.0		41.2	54.8	R
9.5		46.8	49.2		9.0		31.8	46.5		8.1	27	2.2	25.6	K	9.0		8.5	47.4	K	9.0	10	4.0	25.8	
8.5	30	24.3	20.7		8.5	58	24.5	3.6	K	8.6		5.2	48.7		9.5		19.6	29.5		9.3		47.8	29.8	B
9.4	31	12.7	44.8	B	9.5		38.3	54.6		9.5		41.0	49.8		9.4		49.5	51.9		9.3		48.0	1.9	
9.0		21.2	58.6	B	9.4		48.3	1.8	B	9.3	28	48.2	1.3		9.4		53.0	52.2	B	6.5	11	32.9	15.5	L
8.3		27.3	57.5	K	9.0	59	13.4	34.4		9.0		54.4	7.5	K	9.5	47	23.9	21.5		9.4		55.3	25.9	
9.5		38.0	14.3		9.5		38.8	32.0		9.1		59.6	31.9	K	9.5	48	6.2	13.6		9.0	12	4.4	9.7	B
9.4		58.0	58.4	B	9.4	0	7.3	12.3	B	9.1		59.8	49.4		9.5		19.3	1.6		9.3		18.8	13.2	
7.4	32	6.6	8.5	K	9.4		17.1	36.5		8.5	29	12.1	33.6	K	9.4		29.5	22.2		8.0		17.7	35.2	K
9.0		8.7	50.1	K	8.4		19.0	16.5	K	9.4		15.0	8.2		9.5	49	8.1	3.8		9.5		26.6	29.2	
8.5		12.3	56.1	K	9.3		51.3	48.3	B	9.4		23.3	5.2		8.4		24.6	35.9		9.3		40.5	28.7	B
9.5		21.2	16.8		9.4	1	6.1	48.3	B	9.4		29.6	4.5		9.5		48.0	13.9		9.5		48.2	40.7	
8.3		31.4	6.8	K	9.5		28.5	28.9		9.5		59.0	28.4		9.5	50	5.2	47.0		9.2		54.3	14.5	K
8.5		34.8	24.1	K	9.0	2	26.7	2.7	K	9.5	30	19.2	58.0		9.5		43.9	25.0		9.5	13	25.8	30.7	
9.1	33	22.4	23.8	K	9.5		33.8	19.2		9.5		35.6	55.3		9.5		50.8	55.5	B	9.5		40.5	42.4	
9.5		49.1	28.9		9.5		56.1	41.9		7.0		43.7	9.9	K	8.9		58.2	51.4	K	9.5	14	4.3	6.0	
9.2	34	47.2	49.0		9.4	3	20.2	4.8		9.3	31	17.5	30.8		9.5	51	8.2	14.2		9.5		51.2	18.3	
9.5	35	22.5	23.0		9.5		52.7	36.1		8.8	32	36.1	30.1		9.3	52	6.1	48.9		9.1		59.5	48.6	
9.4		23.7	44.0		9.1	4	16.6	39.2		8.7		39.2	2.0		9.3		10.0	33.2		9.4	15	24.8	47.3	
9.4		38.2	7.0		6.0	5	27.8	53.4	K	9.0	33	18.4	0.4		9.5		25.8	12.5		9.5		24.8	40.7	
9.5	36	36.0	1.8		9.1		29.7	59.5		7.0		28.2	16.7	L	9.4	53	55.4	57.0		8.9		38.5	4.2	R
9.4		40.0	7.2		9.5	6	9.5	29.5		8.5		36.9	29.5	K	9.5	54	58.2	53.2		7.7		45.7	50.0	L
6.5	37	15.3	24.7	K	9.5	7	48.8	44.6		8.7		40.2	10.9	L	8.5	55	8.9	35.0		8.3		59.2	18.0	L
9.5	38	17.8	49.8		9.5		57.3	29.8		8.2	34	47.3	2.2	K	9.5		9.8	8.7		9.4	16	3.7	57.8	
9.3	39	57.1	29.8	B	9.5	9	6.4	10.5		9.5		54.6	30.5		9.5		43.8	42.2		9.1		33.1	1.1	
9.3	40	7.9	4.7		9.5		52.5	36.3		9.2	35	46.1	11.2	K	8.5		54.2	7.3	K	9.2		58.2	16.2	
8.9		25.2	59.6	K	7.0	10	4.8	28.8	K	9.5		47.5	15.7		9.3	56	5.6	21.5		9.5	17	8.2	15.9	
9.0		36.4	37.6		9.4		9.4	44.9	B	9.5	36	25.6	44.6		9.0		24.9	54.6	K	9.5		10.3	19.0	
9.1		56.8	48.8		7.5	11	43.3	58.1	K	8.0		29.7	56.8	K	8.9		28.6	28.0		9.3		43.8	23.8	
9.5	41	9.8	15.4		8.8	12	13.7	1.1	K	9.5		46.6	19.0		9.5	57	51.9	56.6		9.0		56.5	38.6	
9.2	42	9.7	24.0	K	9.5		34.6	20.5		9.4	37	15.4	26.0		9.3		52.6	8.4		5.8	18	4.0	6.3	R

3101—3160					3161—3220					3221—3280					3281—3340					3341—3400				
	17ᵘ		+23°			17ᵘ		+23°			17ᵘ—18ᵘ		+23°			18ᵘ		+23°			18ᵘ		+23°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.2	18	5.8	48.0	B	9.2	35	55.8	26.2	B	9.2	50	17.3	55.5		9.3	6	33.4	49.8		8.9	21	52.8	55.1	
9.2		11.5	47.0		8.5	36	20.2	33.0	K	9.4		21.5	48.6		8.8		38.3	27.4	K	8.5		56.0	45.5	
9.4		34.8	42.4		9.5	37	6.1	3.3		9.5		32.2	6.7		9.0	8	35.5	32.4		9.1	22	35.2	1.6	
9.4		37.8	11.3	B	9.1		13.5	33.1		9.4		33.2	47.8		9.1		42.7	10.0		8.9		38.1	4.6	K
9.4		49.2	15.0		9.0		39.2	33.1	K	9.3		48.7	56.0		9.5	9	25.0	24.9		9.5		51.8	51.7	
9.5	19	6.5	32.5	B	9.1		49.5	15.5		9.2	51	4.8	49.2		9.5		38.1	19.4		9.3	23	24.4	34.8	R
9.5		9.4	34.2		9.5	38	9.7	25.4		9.2		9.3	3.1		8.7		47.1	56.3	K	6.0		35.6	46.4	R
9.4		24.8	11.8		9.4		20.0	22.2	B	9.5		36.8	53.3		9.5	10	16.5	30.7		9.1		45.7	6.5	K
9.5		40.2	11.5		9.5		21.1	18.2		9.5		45.4	17.6	B	7.5		29.5	21.0	K	9.3		54.5	35.5	
9.5		44.1	21.4		9.5		27.4	2.3		9.4		56.1	49.6		9.5		34.1	50.6	B	8.7	24	29.6	9.1	K
9.3		44.5	53.3		9.2		52.3	12.1		9.2	52	14.9	53.5	K	9.4		43.2	50.3	B	9.5		31.2	11.8	
9.1	20	18.3	28.7		9.0		54.1	31.3		9.5		17.5	12.8		9.5	11	4.0	3.2		9.5		35.0	53.8	
9.0		18.4	15.2	B	9.3		55.3	44.3		7.9	53	4.9	50.8	K	9.5		24.0	29.8		9.5		56.2	14.5	
9.4		19.1	3.1		9.3	39	19.7	53.0		9.5		25.5	43.8		9.5		33.8	25.8	B	8.6		59.6	44.9	K
9.4		23.3	4.9	B	9.5		34.8	21.4		9.3		36.7	32.3	B	9.5		39.0	51.7		9.5	25	25.4	27.6	
9.5		48.1	21.7		9.4		41.2	19.7		9.1		53.0	30.3	K	9.1		42.9	19.8		9.3		27.9	30.8	
9.5		52.2	22.5		9.5		42.1	33.6		9.5	54	21.3	40.3		9.4		57.5	44.5		9.1		39.1	4.0	
8.9	21	1.1	19.0		9.0	40	25.0	38.2	K	9.1		22.8	11.8		9.5	12	1.3	2.8		9.5		52.6	44.7	
9.2		10.2	45.5	B	9.4		40.3	1.0		8.6		44.2	9.3		7.0		4.2	13.6	R	9.1		56.1	8.6	
9.0		11.0	30.4		9.3		48.2	8.2		9.5	55	10.7	55.9		9.1		14.3	13.1	B	9.5	26	0.0	0.8	
9.0		11.8	23.1		9.5		48.2	33.4		9.4		24.5	23.7		9.4		21.2	54.8		9.0		9.7	58.5	
9.0	22	18.5	43.8		9.5		52.5	44.4		9.4		26.5	24.0		8.1		36.5	30.7	K	8.0		27.1	1.8	K
8.6	23	5.2	21.7	K	9.3	41	0.5	23.4		9.3		38.7	3.1		8.0	13	14.0	21.7	K	6.0		44.4	30.6	R
8.0	25	5.5	14.0	K	9.4		38.9	57.2	B	8 9		40.6	56.1		9.3		21.9	4.4		9.5		47.0	46.4	
8.6		20.1	43.8	K	9.5		59.2	41.9		9.0		40.9	1.8		8.9		57.0	36.2		9.5		58.3	3.7	
9.5		51.1	25.9		8.6	42	30.3	42.5		9.5	56	6.2	50.6		9.5	14	3.9	31.7		9.0	27	8.5	36.3	
9.4	26	20.6	40.1		8.9		39.2	15.2		9.3		17.1	10.1		9.5		14.0	23.5		9.3		10.4	45.7	B
8.7		27.2	57.9	K	8.8		44.4	1.7	K	9.5		43.8	7.2		9.3		17.5	4.6	K	9.3		11.8	47.0	
9.3		35.6	39.1	B	9.4	43	3.8	17.9		9.1	57	7.5	45.1		9.5		44.7	9.5		9.4		12.6	59.5	
8.9		44.2	51.1		8.6		29.5	25.1		9.1		9.5	31.0		9.0	15	22.7	56.5	K	9.5		19.5	4.9	
8.5		46.1	23.4	K	9.5		44 4	55.1		9.0		17.8	48.9	K	9.3		24.6	54.9		9.5		20.1	10.9	
9.1		52.7	55.4		9.0		46.2	20.0		9.0	58	10.7	47.6	K	9.1		44.9	52.6	K	9.5		31.1	18.0	
8.8		54.3	28.6	K	9.0		48.5	30.3		8 9		11.5	26.5		9.4		55.9	55.8		9.2		34.2	11.9	K
9.0	27	19.5	56.9		8.5	44	30.9	16.9	L	7.1		41.7	56.3	K	9.2	16	1.0	46.2	B	9.5		43.8	59.1	
9.2		26.4	5.7	B	9.4		33.2	49.9		8.6		45.8	53.0	K	9.5		2.0	32.0		9.4		45.8	27.5	B
9.5		58.3	5.1		9.5		59.0	30.8		9.0	59	17.5	55.6	K	6.5		7.2	13.2	R	9.4		52.8	56.4	
9.5	28	0.3	11.1		9.4	45	9.2	57.4	B	8.7		17.6	43.0	L	8.8		7.2	47.5	B	9.3		53.3	27.0	
9.5		26.5	58.6		9.5		53.3	37.2		9.5		47.2	29.2		9.1		31.5	40.0	K	9.3	28	1.4	31.4	
9.5		27.8	10.0		9.2		56.8	2.6		9.5		47.9	21.3		9.0		32.7	24.9	L	9.1		18.6	27.7	B
8.4	29	11.5	16.9	K	8.3	46	8.1	22.0		8.7		51.3	8.3		9.3		38.5	40.4	K	9.5		21.3	22.7	
9.5		32.9	35.2		9.4		40.8	30.0		9.5		57.9	25.7	B	9.5		56.4	45.1		9.5		27.2	12.1	
9.4		50.9	8.1		9.0		50.1	48.9	K	8.4	0	8.8	59.4	K	9.5		58.7	29.3		9.0		40.8	22.0	K
9.5	30	9.7	55.5		9.4		58.8	5.8		9.4		45.4	25.1	B	9.5	17	17.3	38.1	B	9.5		47.3	59.2	
8.7		26.6	58.3	K	9.5	47	15.2	3.4		9.3		58.2	48.2		9.5		18.2	0.8		8 2	29	25.6	45.1	K
9.4		46.1	41.0		9.0		15.9	16.5		7.5	1	0.6	23.4	K	9.0		23.0	22.4	S	6.0		27.7	29.3	K
8.1	31	10.4	30.9	B	9.2		33.0	1.7	B	9.4		22.6	50.0		9.3		48 5	12.5		9.4		45.2	28.5	
9.1		19.5	35.8	B	8.8		35.5	8.7	K	9.3		31.4	53.8	B	7.7		45.2	36.3	R	9.0	30	5.5	36.8	K
9.4		25.4	47.8		9.5		47.2	14.8		8.8		59.9	51.0		9.5	18	51.9	5.6		9.4		16.8	59.7	
9.2		28.3	24.0		9.5		54.1	55.4		9.0	2	4.7	33.0	K	8.8	19	8.1	2.3	K	9.5		17.0	11.1	
8.3		30.0	11.8	B	9.5		59.1	6.4		8.8		16.0	48.5		9.3		34.4	5.3	B	9.5		23.2	8.1	
9.2		46.1	3.0	K	9.5	48	15 6	55.9		8.9		29.1	6.2	K	9.1		53.0	7.3	K	9.5		30.0	11.0	
9.1	32	3.5	57.9		9.4		15.8	34.5		9.3	3	1.2	33.1	K	9.5		55.7	26.5		9.1		33.9	28.8	K
9.1		22.9	12.8	K	8.5		29.6	15.8	K	9.0		4.6	8.3		8.9	20	0.0	11.1	K	9.4		42.4	51.0	
9.5		24.1	58.9		9.0		52.3	47.9		9.2		47.3	7.8		9.5		33.5	29.3		9.5		50.0	17.5	
9.5		34.5	35.6		9.3	49	38.5	25.4		9.5	4	30.4	13.2		9.5		41.9	37.5		9.5		51.3	15.0	
9.5	33	10.5	34.5		8.3		41.4	54.2	L	9.3		35.0	51.5		9.4		48.0	25.3	B	9.5		52.0	3.2	
9.3		16.4	59.8		9.5		52.0	39.4	B	9.5	5	10.0	12.1		9.5		57.0	52.8		9.5	31	5.7	45.9	
9.4	35	3.5	26.2		9.4	50	1.8	21.5		9.5		15.4	45.5		9.5	21	4.6	2.0		9.5		42.6	53.8	
9.5		36.8	9.9	B	9.2		3.6	2.0		9.5		53.4	24.6		9.5		12.8	7.2		9.5		43.5	41.4	
7.7		51.2	49.9	K	8.4		15.3	44.6	L	9.2	6	11.8	42.8		9.5		45.7	23.8		9.3		59.3	21.9	

18ᵐ—19ᵐ **+23°**

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵘ	+23°			18ᵘ	+23°			18ᵘ—19ᵘ	+23°			19ᵘ	+23°			19ᵘ	+23°	
m		′ ″		m		′ ″		m		′ ″		m		′ ″		m		′ ″	
9.1	32	16.3	56.2	6.2	42	13.0	21.4	B	9.2	54	2.8	19.5		9.4	4	15.5	37.2		7.5	17	23.6	41.5	L
9.2		30.2	18.4	9.2		20.4	10.5		8.9		7.4	26.7		9.4		19.6	2.2		9.4		31.8	56 6	
9.5		32.2	24.2	8.5		35.3	20.1		9.3		30.0	57.6		9.4		20.1	6.0		9.1		34.5	39.0	
9.4		32.6	29.9	B	9.5		54.4	31.5		8.0		32.7	34.8	L	7.8		38.0	36.7	K	9.1	18	2.5	36.5	
9.5		41.5	27 9		6.9		54.7	53.7	L	8.0		40.1	5.6	K	9.3		56.3	25.1		9.0		21.4	30.3	K
9.5		53.9	16.2		9.5		57.6	42.9		9.5		44.4	14.6		6.8	5	4.2	14.8	K	8.0		37.3	19.7	K
9.5		59.7	48.8		9.2	43	23.7	11.5	K	9.5		50.9	13.3	B	9.3		8.0	2.7		9.5		41.2	3.1	
9.4	33	2.5	33.7		9.4		29.0	10.4		9.4		54.3	13.7		9.5		52.2	16.8		8.6	19	2.4	30.8	K
9.3		10.6	41.4		8.5		29.6	43.7	P	9.3		54.4	26.7		9.5		53.2	13.8		9.5		12.2	58.3	B
9.1		32.4	48.1		9.5		31.0	5.2		9.5	55	13.8	58.7		9.5	6	1.3	20.0		9.5		26.7	49.3	
8.8		42.6	42.8	K	9.3		44.7	4.2	B	9.1		25.7	48.4	K	9.5		1.4	31.6		9.5		29.6	20.9	R
9 4		57.2	16.4		9.4		51.9	13.9		9.2		31.9	45.4		9.5		5.7	3.9		9.5		38.7	48.8	
9.2	34	10.2	14.9		9.1		56.5	21.7		9.5		47.6	23.2		8.0		23.2	13.0	K	9.5		41.1	10.8	
9.3		10.7	50.7		9.2	44	6.7	51.3		9.5	56	0.5	2.2		9.4		27.5	36.0		9.5		51.4	6.2	
9.5		26.2	59.9		9.0		15.2	17.7	K	9.5		1.2	15.8		9.5		47.1	14.3		9.1	20	15.5	33.2	
9.4	35	0.3	55.7		9.5		19.0	5.7		8.7		18.8	58.7	R	8.8	7	15.1	9.1	K	9.1		57.2	48.0	
9.3		10.8	46.8		7.1		23.8	56.2	R	9.2		32.7	54.4		9.4		36.9	28.1	R	9.5	21	7.2	17.9	
9.5		19.4	53.5		8.7		26.5	38.0	L	9.5		37.0	1.8		9.5		56.4	28.3		9.5		7.4	4.5	
9.4	36	7.6	44.2		9.0		40.5	37.3		9.2		37.4	31.4		9.4		57.0	12.9	B	9.5		7.6	11.7	
9.5		10.6	51.1		8.0		45.2	15.3	K	9.0		52.6	9.9	K	9.4	8	13.3	20.1		9.1		19.3	22.7	K
8.3		10.7	43.9	L	9.5		48.9	1.4		8.0		59.8	54.5	K	9.4		14.4	32.1	K	8.0		26.2	53.5	L
9.5		29.4	51.9	B	9.1	45	18.1	10.4	K	8.1	57	18.5	24.9	K	9.4		29.3	6.9		9.0		55.6	43.8	K
9.5		43.7	6.4		9.5		19.2	47.2		8.0		36.1	8.4	K	9.1		30.8	56.3		9.1	22	16.5	34.0	
9.4		48.3	22.0		9.5		21.5	18.7		9.4		40.8	3.1		9.4	9	1.7	47.9	K	9.2		41.4	29.1	
9.5	37	15.8	53.8		9.2		31.2	14.0	K	9.5		42.9	55.0		9.4		20.6	5.4		9.5		49.3	54.5	
8.2		20.2	18.8	L	8.7		47.6	44.9	L	9.0	58	9.1	9.6	K	9.4		23.0	0.2		9.5	23	16.0	5.1	
9.4		27.5	0.7	B	9.1	46	14.1	51.1		8.3		28.7	31.1	B	9.1		31.6	42.3	K	9.5		39.4	43.4	B
8.7		38.3	23.5	K	9.5	47	0.9	45.0		9.0		32.4	32.6	R	9.4		48.8	49.4		8.9		53.8	20.2	K
9.5		43.0	0.6		9.4		15.5	28.3		6.9		33.6	6 8	K	9.5		49.4	45.6		9.5	24	4.8	58.7	
9.5		46.3	19.5		9.3		44.0	32.2		9.5		37.8	38.3	B	9.2		50.3	54.4	K	9.0		16.4	28.8	K
9.1		50.3	56.4	B	8.8		44.4	3.0		8.7		43.1	6.1	K	8.7		56.2	11.8	K	9.3		25.1	37.8	
9.5		51.0	49.4		9.1	48	15.3	25.6	K	8.5	59	4.2	13.1	K	8.5	10	13.4	29.8	L	9.5		27.0	55.4	
9.4		51.4	35.4		8.5		35.6	40.4	K	9.4		13.7	48.3		8.9		21.8	58.7	K	9.3		42.0	0.7	B
9.4		57.6	35.4	B	9.1		42.8	58.4		9.5		26.0	9.3		9.5		29.2	11.8		9.4		48.7	5.3	
9.4	38	0.0	48.8		9.0		45.8	56.2		9.3		29.4	29.2		9.2		54.5	33.3		9.5		55.7	13.7	
9.4		6.1	6.8		9.5		46 9	27.5		9.5		30.2	14 6		9.4	11	7.8	32.8		9.4	25	3.7	13.7	
9.1		19.6	16.2		8.3	49	8.1	2.3	K	9.3		41.6	6.2		9.5		25.7	54.8		9.5		41.0	36.6	
7.8		25.6	21.6	K	8.8		19.0	12.8		9.5		55.3	53.3		9.4		51.6	54.6		9.1	26	14.9	36.9	K
6.5		37.9	26.5	K	9.5		41.6	42.7		9.5	0	2.2	23.9		9.5		54.7	43.8	B	9.5		23.4	29.0	
9.4		39.5	46.0		8.3		48.3	22.7	L	9.5		21.2	24.1	B	9.5	12	2.4	7.0		9.3		25.6	50.5	
9.1	39	7.5	38.5	K	9.4	50	13.1	1.6		9.5		21.6	7.3		8.3		33.5	35.5	R	9.4		36.9	24.5	B
9.4		23.4	56.6		9.5		15.3	23.2		7.7		45.5	36.0	R	9.5		45.7	49 8		9.2		38.2	35.4	K
8.8		26.6	45.1	K	9.5		25.0	9.6		8.9	1	20.6	45.6		9.5	13	0.6	43.6		9.4	27	19.7	51.5	
9.5		40.5	38.0		9.5		32.5	53.6		8.7		21.7	41.4		8.6		3.2	16.5	L	8.0		20.7	11.2	L
9.4		50.9	27.2		9.3		54.5	35.0		9.1		34.3	18.7		7.4		9.3	2.2	K	9.1		21.6	46.8	K
9.5		51.2	11.8	R	9.1	51	1.8	56.0	K	9.5		51.2	47.6		9.1		32.3	5.4	B	9.5		23.4	55.2	
9.3	40	2.4	32.1		9.4		57.8	21.7		9.3	2	1.1	9.6		9.5		48.6	6.4		9.3		31.3	54.2	
8.5		8.1	8.6	K	9.5	52	10.1	42.8		9.2		2.6	44.4		8.7		55.4	29.6	L	9.1		39.7	1.5	B
9.4		25.5	40.0		9.5		11.1	43.3		9.4		19.1	10.3		9.1	14	1.3	21.7	K	8.2		41.0	50.7	K
8.4		42.4	25.7	R	8.5		14.5	39.0	R	9.5		23.1	6.4		9.4		5.2	52.8		9.5		53.7	59.6	
9.5		48.0	33.6		9.5		16.5	36.3		9.0		25.5	38.2		8.8		18.2	14.3	K	9.3		59.3	59.8	B
9.5		50.8	56.3		8.9		20.6	46.6	B	7.0		35.8	56.8	K	9.4		19.3	59.0		9.3	28	24.1	32.3	
9.5		55.1	10.6		7.5		24.5	36.5	R	9.5		39.6	54.0	B	8.9		40.2	15.2	K	8.7		32.1	37.1	B
9.5		57.4	28 1		8.5		26.6	0.6	B	9.5		46.0	16.1		9.3	15	36.5	20.7		8.4		34.6	34.2	L
9.5	41	23.7	50.3		9.1		28.7	51.6		9.1		47.7	20.2		8.4		39.1	11.3	K	9.3		42.1	41.1	
9.4		23.8	57.7		9.5		45.9	46.2	B	9.2	3	1.5	45.9		9.1		50.5	33.5		9.5		46.2	29.3	
9.5		31.4	1.2		9.2		48.7	50.1		9.2		42.2	11.1		8.7	16	0.1	11.8	K	9.1		48.5	10.2	B
9.4		59.0	8.1		9.0		52.2	12.6		8.9		47.7	53.8	L	9.3		23.5	39.0		9.4		49.6	8.7	
7.8	42	10.5	33.0	R	9.2		55.7	49.6		9.4		52.7	50.6		9.4	17	1.5	0.0		8.1		52.9	9.5	K
9.5		12.8	42.6		9.4		59.2	11.8		8.5	4	1.6	41.7	K	9.5		10.8	58.8		9.5		55.5	18.9	

4301—4360				4361—4420				4421—4480				4481—4540				4541—4600			
	21ᵐ	+23°			21ᵐ	+23°			21ᵐ—22ᵐ	+23°			22ᵐ	+23°			22ᵐ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	17 35.0	37.1		7.1	32 47.9	50.5	B	9.5	47 19.5	35.8		9.3	3 52.6	18.1		9.5	20 44.4	50.3	
8.3	39.4	6.7	K	8.8	33 2.1	40.3	R	9.4	22.6	54.2		8.6	4 11.6	46.2	K	8.0	46.1	6.2	K
9.5	43.6	24.6		8.6	5.9	2.5		9.5	38.4	1.3		9.3	12.9	59.2		9.3	47.9	34.3	
9.3	44.8	42.8	B	9.5	13 4	58.6		9.4	48 11.2	53.7		7.9	5 10.2	4.2	R	9.3	21 1.8	54.9	
6.2	52.6	55.1	L	8.8	27.0	18.2		9.5	43.0	53.9		9.5	16.1	8.5		9.3	27.7	1.3	
9.5	18 15.8	18.6		9.0	35.9	40.6	K	9.5	49 19.5	9.3		7.5	40.3	2.9	K	9.5	30.5	34.7	
8.8	29.3	48.2	K	9.5	45.1	55.5	B	9.5	20.4	22.7		9.4	50.0	3.8		8.7	37.3	44.2	
7.9	46.3	52.8	K	8.5	59.4	35.8	K	8.0	26.2	39.3	K	9.5	6 18.0	3.7		9.2	49.8	42.4	
9.5	55.5	3.0		9.2	34 47.0	2.7		8.8	57.2	13.1	K	9.4	39.3	12.3		9.3	56.0	54.1	
9.5	19 31.0	44.9	B	9.5	35 0.0	0.7		9.5	50 18.1	14.3	B	8.2	39.8	19.5	K	9.2	22 23.2	25.9	
9.5	32.4	25.4		9.4	18.8	40.7		8.7	35.4	37.9	L	9 3	7 32.3	17.3		9.5	47.2	51.5	
9.5	41.4	34.3		9.4	23.8	48.0	R	9.3	40.2	58.7		9.5	53.7	53.6		9.3	51.9	40.5	
9.0	57.0	4.1		9.5	40.3	27.5	R	8.4	51 4.3	2.0	B	7.2	8 2.0	35.2	K	9.5	23 48.9	20.7	
9.5	57.3	18.9		9.4	43.0	53.8		9.5	4.3	6.0		9.5	29.4	6.0		9.4	56.5	24.6	
8.5	20 6.0	40.3	K	9.5	54.2	41.3		9.4	16.5	13.4		9.3	49.4	54.0		7.5	24 19 9	14.5	K
9.5	21.5	40.5	B	9.2	36 12.1	23.6	B	9.3	38.0	37.9		8.7	9 19.8	50.2	L	9.5	52.0	51.6	
8.5	56.3	41.7	K	9.3	28.4	37.1	R	9.4	54.5	56.4		8.6	20.9	45.6	L	9.5	54.9	45.1	
7.8	21 30.3	58.2	K	8.5	45.4	35.7	R	9.4	52 7.0	45.6	B	8.5	36.4	28.0	L	8.3	59.3	7.2	K
9.1	46.6	59.4	K	8.5	47.2	13.7		9.4	16.3	20.4	B	9.5	49.8	28.2		9.1	25 24.2	1.3	
8.8	47.2	2.0		9.1	37 0.0	30.9		9.5	18.1	27.9		9.1	10 5.9	49.2	K	8.7	55.8	51.5	
9.3	22 18.2	6.4	B	8.3	15.7	28.0		9.3	38.5	59.9		9.1	13.1	53.2		9.5	26 6.0	36.6	
9.3	24.2	10.1		9.5	18.5	16.9		7.5	53 7.9	14.1	L	9.5	23.4	10.5		9.5	12.5	52.5	
9.5	23 12.7	57.1		9.4	22.2	17.6		8.5	19.4	24.1	R	9.4	59.8	21.0		9.4	44.4	51.6	
9.4	21.3	14.8		8.2	42.3	55.2	B	9.5	53.8	57.6		9.3	11 4.2	7.0		9.3	27 18.1	51.9	
4.5	23.2	0.0	K	9.0	38 34.7	7.3		9.5	55.4	13.0		9.3	9.9	25.6	R	9.5	18.5	1.8	
8.5	35.3	17.2	K	9.0	50.2	33.8		9.3	54 21.1	59.7		9.3	10.0	36.0		9.4	34.9	6.0	
8.5	40.4	17.2	K	8.2	51.4	51.8		9.1	45.3	36.4		8.8	24.1	22.7	K	9.3	43.2	21.6	
9.4	25 10.8	1.3		9.5	39 5.7	36.9		8.5	53.9	52.0	K	9.0	12 12.2	54.9		9.0	29 35.0	21.4	K
6.5	16.5	12.7	L	9.1	56.3	49.3		8.3	58.1	1.4		9.0	13 3.1	14.0	K	9.5	37.4	28.9	
9.4	43.4	58.0		8.5	40 21.0	1.4	K	9.5	55 6.7	43.8	B	9.3	8.8	37.5		9.3	45.0	24.5	
8.8	45.4	4.5		9.3	32.3	10.3		9.0	8.7	32.9	B	9.5	13.9	3.0		8.8	54.0	42.5	
9.4	56.8	6.3	B	7.8	32.5	27.2	R	9.3	11.0	12.3		9.4	36.8	12.4		9.3	30 10.8	45.1	
9.0	26 3.0	34.8	L	9.4	54.7	50.8		9.5	56 0.7	10.5		8.5	40.0	49.0	B	9.3	15.5	21.5	
8.5	19.5	28.2	L	9.3	54.8	30.0		9 4	21.4	22.4		9.3	44.7	54 4		9.3	23.9	15.5	
9.5	27 17.2	20.3		9.0	59.8	13.1		9.3	22.9	17.6	B	9.5	14 37.0	25.8		9.1	31.5	11.2	B
9.3	24.9	25.5	B	9.4	41 0.7	49.0	B	9.0	57 3.4	56.3		8.0	44.5	20.8	K	6.5	38.8	15.2	K
8.2	34.3	26.9	K	8.2	7.9	48.6	K	9.1	12.7	21.0	K	9.4	45.1	58.7		9.3	44.3	51.6	
9.5	48.0	6.2	B	9.3	9.1	44.6	B	8.8	34.8	18.9	K	9.4	56.0	31.3	B	8.7	31 1.0	24.9	K
9.3	28 4.4	9.0	B	7.2	33.4	48.2	K	9.1	49.0	8.8		9.5	15 9.3	5.9		9.4	38.4	54.8	
9.5	24.3	34.1		8.9	52.3	42.0		9.3	58 0.7	29.3		9.5	15.9	50.2		9.3	55.5	58.1	B
9.0	24.7	23.1		9.0	54.8	12.4	K	8.8	37.4	28.6		9.5	16 2.4	59.0		9.3	32 8.8	15.9	
9.5	36.5	19.3	B	9.5	42 5.7	57.5		9.4	39.4	11.1		9.4	9.6	43.4		9.4	17.8	34.3	
8.6	4.4	51.1		8.5	10.0	4.1	K	9.5	0 2.0	43.1		9.5	11.3	48.3		9.5	26.6	3.6	
9.5	49.8	2.8		9.4	34.4	59.0		9.5	21.2	4.0		9.5	16.2	3.0		9.5	33 1.0	53.9	
8.9	51.8	17.2		9.1	39.8	31.7		9.5	37.0	35.8		9.5	22.9	33 9		9 5	1.1	53.4	
6.5	54.4	50.8	L	7.8	43 3.8	23.8	K	8.5	40.0	19.6		9.5	17 5.3	53.4		8.5	1.5	2.1	K
7.8	59.5	19.9	B	9.5	12.0	8.2		9.4	1 5.6	26.8	B	9.5	35.0	6.0		9.5	13.5	9.4	
9.0	29 10.7	28.3	B	9.5	12.8	17.5		9.1	15.6	4.7		9.4	18 13.4	13.5		8.2	19.2	38.9	K
7.4	17.3	19.3	B	9.5	29.2	52.6	B	9.5	28.0	33.3		9.5	25.0	40.6		9.0	43.0	21.6	
9.0	50.0	13.6	K	9.5	36.7	53.0		8.7	33.5	36.7	K	9.5	33.9	59.4		9.4	46.7	31.8	
8.8	50.8	43.0		9.2	44.0	8.7		9.3	34.2	34.2		9.1	44.8	34.7	K	9.1	34 10.0	17.0	
9.1	30 19.7	46.2		9.2	44 55.3	11.6	B	6.8	35.4	27.8	K	8.8	52.1	22.3	L	7.3	31.9	4.8	K
9.5	19.5	10.1		9.2	45 21.0	16.1		9.3	35.9	56.5		9.4	53.1	46.2		9.4	33.8	16.9	
8.4	23.2	5.4	B	9.5	28.5	57.3		9.3	2 23.2	0.9		9.4	19 35.9	25.1		9.5	39.3	4.0	
8.5	47.7	1.1	K	7.0	40.8	19.6	K	8.8	3 18.0	1.9	K	9.5	43.2	4.6		8.9	35 54.1	2.4	K
8.3	31 9.8	20.0		8.2	46 10.7	1.9	B	8.7	20.2	51.4	K	9.5	48.7	20.1		9.3	36 9.1	58.6	
9.4	18.9	56.4		9.5	24.2	19.6		9.5	22.9	26.7		9.5	52.6	11.7		9.0	37 12.2	58.3	B
9.5	33.5	27.9		9.5	27.3	57.5		9.2	25.9	19.1	B	9.4	20 3.3	39.9		9.4	23.2	1.3	
8.0	32 10.8	45.1	K	9.5	49.0	5.2		9.4	45.5	38.7		8.7	20.5	33.1	K	9.2	52.2	34.5	B
9.4	46.7	14.9	B	9.3	54.3	40.9		9.5	48.4	58.3		9.4	23.5	40.0		7.4	53.5	37.1	B

4601—4651				4652—4702				4703—4753				4754—4804				4805—4854			
	22ʰ	+23°			22ʰ—23ʰ	+23°			23ʰ	+23°			23ʰ	+23°			23ʰ	+23°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.6	38 31.5	32.7	K	9.5	52 22.6	55.3		9.4	7 11.4	51.4		9.5	23 31.4	51.8		9.3	38 25.1	11.2	
9.5	43.8	25.3	B	9.5	22.6	43.4		6.5	29.1	19.1	K	9.3	51.1	14.7		9.0	29.7	5.1	
8.7	39 11.8	29.2	K	9.4	35.5	56.8	B	9.3	37.7	37.4		8.7	24 12.8	46.5		8.9	39 4.0	37.1	
8.7	12.6	24.8	K	8.9	44.8	10.3	B	9.5	53.6	6.2		7.7	28.6	19.1	K	9.4	41.2	10.4	
8.9	40 1.1	49.3		9.5	53 9.5	22.1		9.4	54.1	16.0		9.5	36.5	58.1		9.4	53.2	44.0	
8.0	15.2	14.1	K	9.2	18.1	53.0		8.7	54.5	35.4	K	6.8	25 15.4	2.9	K	8.3	55.0	7.8	K
9.5	23.4	57.3		9.5	48.7	29.1		9.5	8 10.3	35.7		8.7	19.0	50.6		9.5	40 32.3	44.5	
9.3	54.7	34.2		8.8	54.2	38.1		7.5	13.7	5.1	K	9.2	33.2	35.5		9.5	42 2.1	38.0	
9.5	57.2	55.5		8.6	54 0.9	13.7	K	8.0	32.3	38.6	K	9.3	48.0	5.4		7.9	3.1	3.8	K
8.5	41 7.2	14.5	R	8.8	12.9	49.5	B	7.0	50.0	59.5	K	9.3	59.7	36.9	K	9.5	41.1	38.5	B
9.3	42 6.1	58.1		9.5	42.7	49.9		9.1	9 10.5	56.0		7.1	26 13.8	33.3	K	9.2	43 56.6	19.5	K
7.7	18.1	7.9	K	9.4	55 30.0	28.3	B	9.5	36.1	12.2		9.3	22.7	40.9		9.3	44 18.6	30.2	
8.5	38.2	35.0	K	9.5	37.4	29.8		9.2	10 7.8	8.0		9.2	47.6	31.3		9.3	18.7	45.0	
9.5	49.7	33.1		9.3	44.4	33.3		9.5	22.2	52.4		6.5	27 46.0	37.5	K	9.5	45 58.4	4.8	
3.9	43 2.0	51.0	K	9.0	52.5	36.4	B	9.0	26.2	43.7		9.2	28 31.3	13.5		9.5	46 8.3	47.9	B
8.5	22.4	45.3	K	9.5	56 29.6	15.4		9.4	49.4	41.4		6.7	41.4	45.5	K	8.8	17.4	40.1	K
9.3	32.3	37.9	B	9.3	57 0.0	8.0		9.4	11 13.4	2.5		8.4	29 13.3	19.1	K	8.8	21.8	52.4	R
8.7	40.2	52.2	K	9.2	14.4	52.0		8.1	21.0	29.7	K	9.5	55.4	44.6		9.4	22.3	15.6	B
9.3	44.1	15.9		9.2	28.2	37.9		9.5	12 11.1	40.3	B	9.3	30 9.4	34.9		9.5	44.5	54.7	
8.3	45.5	2.2	R	9.2	40.1	6.7	K	9.4	11.9	8.5		9.2	30.5	7.6		9.2	48 7.0	30.4	B
9.2	47.0	28.3		9.5	51.3	2.2		7.6	31.8	2.1	K	9.3	37.8	16.0		9.4	25.4	12.0	
9.3	44 17.9	52.3		6.7	58 0.0	45.7	K	9.5	40.6	20.8		9.2	47.1	52.8	K	8.5	39.3	40.9	K
9.5	25.7	34.4		9.3	16.1	15.6	B	9.3	46.3	56.1		9.3	31 10.0	0.0		9.5	44.7	8.1	
8.5	27.9	13.1	K	6.9	25.7	52.6	K	9.4	49.2	8.9		9.3	15.2	25.8		9.3	54.1	22.0	
9.3	45 5.5	5.7		9.3	23.6	31.7		9.4	54.9	41.4		8.8	21.6	40.4		8.5	49 56.4	34.7	K
9.0	16.0	2.5	B	9.4	59 9.5	6.7		9.0	13 43.2	13.6	K	8.7	33.4	52.8		8.0	50 41.1	33.6	K
9.3	34.1	17.8		9.5	0 14.4	1.2		9.5	43.2	5.7		8.1	32 11.7	55.5	K	8.5	51 5.1	37.1	K
8.5	35.4	23.1	K	9.5	42.8	52.1		9.2	48.4	27.3		9.4	20.4	26.9		9.4	20.7	16.8	
9.5	37.7	47.5		9.4	1 5.3	55.2		9.5	14 4.4	12.0		9.2	24.7	30.1	B	8.6	27.1	22.7	K
9.4	37.9	40.5	B	8.8	2 22.4	24.4	K	9.4	20.6	50.5		9.0	28.8	11.4		8.6	55.6	56.5	K
9.4	46 12.8	11.4		9.3	24.8	19.4	B	9.2	29.4	20.9	R	8.2	33 1.3	47.0	K	9.3	52 4.4	12.6	
9.5	42.1	56.2		8.4	27.9	28.1	K	9.5	47.6	24.5		7.5	13.9	53.3	K	9.1	12.5	26.8	
7.5	47 41.4	37.9	K	9.2	3 10.2	52.8		8.7	54.9	29.7	R	9.1	16.4	6.2		9.5	53 13.1	21.4	
9.3	54.5	29.3		8.8	24.5	37.4	L	8.3	15 18.9	18.4	K	9.4	24.2	57.5		9.4	20.1	43.9	
9.2	49 6.6	53.5	K	9.0	28.9	58.7		9.4	43.7	18.0		9.2	39.8	9.6	B	8.7	21.5	46.7	B
9.4	24.9	9.8		8.3	49.2	31.9	K	9.3	53.9	57.6		9.4	43.5	9.4	B	9.3	23.0	40.4	
9.1	38.2	31.5		8.8	58.0	55.4	K	8.5	17 8.7	12.3	K	9.5	34 2.2	0.8		9.5	40.2	54.7	
8.1	39.8	5.7	B	8.9	4 8.1	9.6		9.2	14.0	41.8	K	7.3	17.0	25.3	K	9.3	54.7	34.0	
9.5	56.7	6.2		9.2	26.3	7.7		9.3	36.3	15.4		8.4	37.1	59.7	L	9.4	54 9.7	39.0	
8.0	50 0.7	55.1	K	9.1	42.5	50.3	K	9.3	18 3.6	15.5		8.3	49.5	55.5	K	6.6	18.1	26.8	K
9.0	5.8	50.6		9.3	44.0	4.0		9.2	15.8	57.2	K	8.1	50.9	10.8	K	9.2	25.4	10.6	
8.3	6.4	29.6	K	9.3	52.2	42.3		9.3	54.5	6.0	B	8.6	56.2	26.8	K	9.1	27.1	28.7	K
9.5	16.8	8.4		8.9	5 12.4	44.9	K	9.5	19 12.0	49.8		8.5	56.4	57.9	K	8.5	59.6	5.5	K
9.0	42.9	1.7		9.3	33.6	50.3		9.5	19.1	4.2		9.5	35 23.8	56.6		9.2	55 17.1	44.3	K
8.2	52.6	19.6	K	9.1	41.6	17.7	K	8.6	46.9	39.3	K	9.3	57.5	19.5		8.5	27.2	19.2	
9.5	51 9.8	43.1		9.4	53.0	28.2		9.5	20 52.4	59.2		8.8	36 6.6	38.9		9.3	56 51.1	34.0	
9.4	17.2	38.4	B	9.0	55.0	22.2	R	9.5	21 25.1	26.8		9.5	32.1	11.4		9.2	57 6.4	53.8	
9.2	37.6	8.1		9.3	6 34.2	16.1	B	8.9	22 9.7	52.5		9.5	37 30.7	49.1		9.1	20.2	54.1	K
8.8	43.1	4.6	R	9.3	35.9	21.3		9.5	15.6	31.5		9.3	40.8	18.4		6.3	58 30.8	44.9	K
8.2	52 11.5	15.8	L	7.3	41.1	21.0	K	7.4	41.7	58.4	R	9.2	38 3.4	5 8		9.1	57.6	4.4	K
9.5	22.4	50.0		7.7	51.8	27.6	K	9.5	48.0	5.7		9.2	23.5	24.1					

Zone +24°

1—40				41—80				81—120				121—160				161—200			
	0h	+24°			0h	+24°			0h	+24°			0h	+24°			0h—1h	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	0 45.0	29.6		9.2	15 23.4	55.0		9.4	27 2.9	36.5	B	9.0	41 55.4	57.6	K	9.3	53 50.0	23.0	B
8.7	1 3.5	6.5	K	9.0	29.2	51.5	K	9.5	8.1	35.7		9.0	42 20.2	40.5		9.5	54.0	5.8	
6.3	24.6	39.2	K	9.5	45.3	4.0		7.5	46.6	18.9	K	7.4	54.8	47.4	K	6.5	54.8	31.2	K
8.0	46.6	29.0	K	8.8	52.0	0.7	B	9.5	28 5.1	56.6		8.9	44 15.9	3.9	K	9.3	54 17.9	25.6	
8.7	55.4	6.0		9.0	16 1.7	21.4		9.2	7.1	51.4	B	9.5	19.2	32.9		9.5	24.8	23.9	
8.0	2 38.4	24.5	K	9.5	17 24.5	58.4		9.1	11.8	47.2	K	9.3	24.3	28.1		9.5	41.7	54.9	
8.3	45.1	44.1	K	9.3	59.9	30.0	K	8.0	29 12.4	22.7	K	9.0	28.9	55.6		9.0	57.2	4.6	K
9.5	3 1.9	0.9		9.5	18 2.6	15.2		8.3	30 23.1	22.2	K	7.5	37.5	59.4	K	9.4	55 26.9	46.0	
9.4	6.2	34.1		9.5	19.2	27.9		9.4	53.1	3.5	B	8.0	45 53.2	8.3	K	8.6	56 16.4	27.4	K
8.8	19.6	0.8	B	9.3	54.3	57.7		8.3	31 18.8	33.0	K	8.9	56.4	36.7		9.4	32.4	5.0	
9.5	28.4	46.2		9.3	19 5.7	30.0		9.0	47.8	56.0	B	9.4	59.3	55.3		9.4	33.6	26.6	
9.4	30.7	25.1		6.5	28.6	14.2	L	9.3	49.0	58.2	K	8.9	46 3.4	19.5		9.5	57 5.5	33.6	
9.5	4 37.3	58.5		7.2	38.6	47.2	K	9.5	32 11.4	0.6		7.0	15.2	41.9	K	8.5	6.8	10.2	K
9.0	43.1	15.5		9.3	41.4	50.5		9.0	33 19.5	10.7		8.8	26.6	26.2	B	9.5	58 9.5	59.0	
9.2	5 21.5	28.4	B	9.4	55.2	51.7	B	9.0	23.7	27.3		8.0	33.1	34.6	K	9.4	9.9	16.0	
9.0	6 20.7	45.2		9.5	20 2.5	55.3		9.4	33.8	4.4		8.0	38.8	56.0	L	9.4	11.0	50.8	
8.3	33.4	51.8	K	9.0	7.4	20.7		9.5	48.1	0.1		9.0	40.0	38.8		9.2	22.8	23.6	
8.5	57.9	40.7	L	9.1	14.1	9.7	K	9.1	34 37.2	28.0		9.5	47 2.6	0.7		9.0	35.0	6.7	K
9.1	7 43.4	24.9		9.3	23.2	33.1		8.8	39.7	7.9		9.1	12.1	5.8		9.5	39.7	41.7	B
8.6	46.6	35.5	L	9.3	44.9	54.9		9.5	35 4.4	28.7		9.5	13.6	14.3		8.9	59 16.9	4.1	K
9.4	8 0.2	32.3		8.5	49.7	7.8	K	9.4	6.8	50.3		9.5	45.9	10.9		9.3	38.0	3.3	
9.4	24.4	26.5		9.4	21 0.8	58.0		9.5	21.7	26.2	B	9.5	47.4	5.0		8.6	39.4	11.9	K
9.5	9 52.5	14.5		9.3	27.6	58.6		9.3	53.4	35.5		9.3	48 11.3	14.4		9.5	1 17.9	19.8	
9.4	57.1	24.2		9.2	27.8	33.8		7.9	59.8	5.8	B	9.3	17.4	9.2	B	9.4	2 2.3	55.7	
9.3	10 1.0	43.4		9.3	48.7	38.6		9.1	36 10.7	57.2		9.4	33.0	21.3		9.5	10.5	5.5	
9.4	9.4	41.7		7.5	56.5	5.5	K	9.5	43.5	4.4		9.5	48.3	36.0		6.0	27.9	41.9	K
9.5	19.9	3.5		9.4	58.5	13.4	B	9.0	58.0	50.1	K	9.5	49 2.6	7.2		8.9	50.3	56.9	K
9.3	24.8	0.5		9.5	22 46.4	53.8		9.0	37 57.7	29.1		8.9	24.2	56.8	R	9.5	4 59.6	12.1	B
8.8	11 11.4	55.9	K	9.5	56.1	40.0		9.0	38 15.4	30.6		8.5	30.3	30.5	K	8.0	5 29.3	41.5	K
8.4	13 31.8	9.0	K	9.5	23 29.3	47.9	B	9.4	44.0	55.4		9.4	36.2	3.4		8.2	40.9	14.3	K
7.5	37.4	31.7	L	9.0	24 13.6	54.6		9.5	56.6	59.4		9.0	38.8	9.2		9.2	59.2	11.3	
9.0	42.5	43.4		9.0	38.6	49.2		9.5	39 9.3	4.3		9.3	50 19.4	58.1		9.4	6 28.0	4.9	
8.5	45.0	53.0		9.2	56.2	57.9		9.5	32.5	8.1	B	8.6	52.4	38.4		9.4	32.1	8.1	
9.3	14 15.1	5.3		9.2	25 33.4	37.6		9.5	45.3	46.0		9.5	51 14.0	51.2		9.5	9 3.5	0.7	B
9.3	21.6	0.9		9.5	50.5	10.0		8.3	57.7	44.5	B	8.6	33.9	18.8	K	9.5	10 31.5	52.2	
9.0	28.4	27.6	K	9.1	54.4	44.8		9.2	40 3.8	1.6		8.5	55.9	16.4	K	9.3	11 8.0	14.4	
9.5	57.9	48.6	B	9.5	58.9	30.0		9.2	7.9	17.0		9.5	52 16.4	49.0		9.5	12 14.8	39.6	
9.5	58.8	5.1		9.5	26 9.5	25.8		8.8	23.2	45.7		8.9	37.3	40.1	K	7.8	13 8.3	24.1	K
9.3	15 3.2	48.8	B	9.5	10.6	33.3		8.9	41 13.2	5.3	K	9.5	57.7	59.9		9.2	25.5	55.9	
9.5	19.0	48.6		7.9	15.6	38.3	K	9.3	21.9	14.0		9.4	53 13.2	6.9		8.3	41.7	4.6	L

201—260				261—320				321—380				381—440				441—500			
	1ʰ	+24°			1ʰ—2ʰ	+24°			2ʰ	+24°			2ʰ—3ʰ	+24°			3ʰ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	13 41.7	51.7	K	9.0	38 47.0	30.6		9.5	4 19.0	19.3		8.3	32 47.2	59.3	B	8.5	0 21.7	48.4	K
9.3	43.4	32.0		9.0	39 1.0	14.4		8.8	5 10.1	42.4	K	9.1	50.1	5.9		9.5	38.5	12.5	
9.0	46.0	29.3		9.3	58.3	46.1		9.3	16.8	35.6		9.5	33 37.7	59.2		9.2	56.6	26.7	R
8.9	14 4.9	19.0	B	7.3	41 7.4	0.3	K	9.2	25.8	41.0	B	9.5	58.5	54.4		9.5	1 12.3	4.0	
8.5	27.5	6.3	K	9.2	42.7	1.7		7.5	27.2	55.4	L	9.5	34 2.5	40.5		9.4	17.2	57.1	
9.1	42.0	42.7	B	9.2	42 40.9	57.3		9.5	40.1	22.3		9.3	25.7	1.8		9.3	25.5	52.0	B
9.3	15 2.0	57.3		8.7	42.3	33.7	K	9.4	7 2.7	24.3	B	9.5	29.7	6.8		9.4	38.2	39.5	
9.5	18.9	9.3		9.5	44 5.4	8.6		9.5	21.9	57.5		9.5	35 48.5	38.3		8.7	39.1	5.7	K
9.0	16 25.9	12.2	K	8.6	13.4	44.5		6.0	31.5	22.6	K	9.3	36 4.3	57.6		8.7	40.2	44.7	K
9.0	52.0	24.7		9.3	23.9	43.4		var	52.2	22.7	B	9.5	32.9	20.0		8.9	2 34.0	1.7	K
8.9	53.1	5.6	K	9.5	45 7.2	11.1		9.5	8 15.7	29.8		8.9	37 24.0	16.8	K	8.3	4 37.1	58.7	K
7.0	19 8.2	41.6	K	9.5	46 0.7	32.4		9.4	23.5	47.0		9.4	39 22.9	31.6		9.5	5 10.3	26.7	R
9.5	8.7	0.7		9.0	9.2	4.6		9.3	9 8.2	8.5		8.9	23.3	4.5	K	9.5	6 5.2	17.7	
9.5	10.0	21.5		9.1	22.4	32.3		9.4	34.9	27.2		8.5	40 8.8	41.7	K	8.7	20.6	23.2	R
9.1	23.1	48.8	K	9.5	37.2	4.1		8.2	11 18.2	51.8	K	8.2	21.8	28.3	K	9.2	22.2	27.0	
9.1	53.2	10.1		9.3	47 0.3	59.0		9.5	12 4.8	16.5		6.0	22.1	35.7	K	9.1	55.2	59.3	R
7.9	56.2	55.9	K	9.1	40.4	42.2	B	9.2	13.9	49.4	K	9.3	28.4	47.8	B	8.4	7 9.0	0.2	L
9.2	20 2.5	58.9		9.1	40.9	49.9		9.5	14 32.2	37.7		9.4	53.1	8.0	B	9.5	32.9	15.2	
9.5	7.7	52.3		9.3	42.6	3.7		8.8	39.7	31.9	B	9.5	41 3.9	50.9		8.9	40.3	51.2	B
9.5	11.3	12.1	B	9.2	48 11.7	37.2		8.8	45.3	0.4	K	8.1	49.3	44.2	K	9.0	46.5	53.2	
8.8	21 20.0	16.2	K	9.3	25.0	12.0		9.5	53.4	54.4		9.5	55.8	27.2		8.7	8 0.8	56.8	K
6.5	26.9	31.6	K	8.8	41.8	28.8	K	9.5	15 21.7	57.2		9.5	42 11.6	36.6		9.5	40.9	56.8	
9.0	22 8.2	12.3		8.0	58.7	1.6	R	9.5	53.3	22.1		9.4	45.2	9.4		9.1	9 9.0	3.5	K
9.4	23 43.7	37.2		9.3	50 9.4	8.8		8.0	16 43.6	50.1	K	9.5	47.4	24.9		7.5	32.8	20.8	L
9.5	44.1	50.6		9.3	22.0	47.2		9.5	44.0	57.4		8.9	43 46.8	36.6	K	9.5	10 12.0	45.8	
9.5	24 8.4	7.2		9.5	25.4	40.3		8.5	17 11.4	11.3		9.5	44 34.9	34.9		9.5	23.3	57.0	
9.5	57.3	7.9		8.8	27.3	22.8	K	7.3	34.1	29.9	K	9.5	45 26.0	35.5		9.2	24.5	58.8	B
9.5	25 8.2	33.3		7.7	51 9.7	8.1	L	9.4	37.8	44.6		8.8	46 3.1	2.5		9.5	11 6.6	14.6	
9.5	22.6	55.9		9.2	32.9	22.4		9.4	38.9	51.2		9.5	17.3	34.1		9.3	13.7	8.3	
9.2	52.6	5.7		9.0	33.2	46.7	B	9.5	18 35.4	35.2		8.7	54.7	8.4	K	9.5	33.4	47.9	
8.8	57.7	28.5		9.3	56.8	1.5		9.0	19 7.6	59.5	K	9.5	47 17.9	35.1	B	7.9	55.4	0.8	B
9.3	26 0.0	42.6		8.6	52 15.0	22.0	K	9.5	27.9	16.1		8.9	23.5	8.2	K	9.4	13 34.9	14.2	R
9.5	11.5	48.9		9.5	15.2	1.5		9.5	40.9	54.4		9.5	49 13.9	9.6		9.1	37.2	57.0	
9.3	52.4	47.2		8.8	53 3.6	29.9	R	9.5	20 9.9	54.0		9.5	15.4	50.9		9.1	42.5	59.7	
9.5	52.6	22.7		9.5	42.1	13.7	R	9.3	31.1	34.1		9.5	50.5	53.4		9.0	58.3	4.2	K
9.1	27 0.8	8.1		8.7	55 22.5	30.3	K	9.5	37.3	56.5		9.1	50 15.0	21.4		8.5	14 1.4	21.9	L
9.0	28 25.1	42.3		9.5	49.0	42.1		9.5	21 40.6	52.6		9.5	20.5	37.6		9.4	34.5	9.7	
9.5	26.8	24.0	B	8.0	56 23.8	44.1		6.2	22 12.6	34.9	K	8.8	46.0	53.1	K	9.3	15 8.9	54.0	
7.3	29 28.2	26.5	L	9.5	38.5	58.2		9.2	17.5	38.1	B	8.7	51 44.3	39.7	K	9.4	32.8	35.4	
9.3	31 1.9	1.2		7.9	57 36.0	25.9	K	9.4	18.6	18.4	B	9.3	47.7	28.9	B	9.0	45.0	17.8	K
8.8	2.3	22.2	K	9.5	48.2	39.0		9.3	20.4	43.0		9.1	52 18.6	17.6	K	5.8	45.7	13.5	K
8.3	28.9	43.0	K	8.0	58 3.3	25.1	K	9.4	37.3	9.4		9.4	57.8	2.8		9.4	53.6	14.2	
9.5	38.4	32.0		9.5	59 34.5	52.0		9.5	23 20.4	58.5		8.2	59.0	34.1	K	9.3	58.3	27.8	
9.3	53.5	3.2	B	9.5	58.7	3.0		8.9	24 9.4	50.4	K	9.3	53 2.8	37.6		9.1	16 25.1	55.7	K
9.5	32 59.9	54.7		7.6	0 5.1	7.3	K	9.5	42.5	12.3		9.0	8.5	35.9	K	8.6	50.3	9.4	K
9.5	33 8.7	18.9		9.5	20.5	22.1		9.1	25 27.0	37.6		9.4	17.8	8.8	B	9.5	17 42.4	26.0	
9.5	32.4	32.3		9.1	33.0	7.5	R	9.3	31.2	11.7		9.5	41.8	55.8		9.4	18 16.2	42.1	B
9.1	38.9	30.2		8.9	41.2	8.5	K	8.5	26 14.8	24.1	K	9.1	47.3	3.4		8.7	20.6	48.5	K
9.4	34 38.5	8.4	B	9.5	43.9	14.8		8.2	16.6	15.1	K	9.5	55 31.9	41.1		9.4	23.1	37.3	
9.0	39.0	34.1		9.5	54.7	33.1		9.5	27 5.3	3.0	B	9.5	56 33.8	55.8		8.7	23.9	17.7	K
9.5	35 0.3	17.1		9.3	55.5	54.1		9.5	40.5	56.5		6.0	58.9	41.2	K	9.5	36.3	38.1	
9.3	14.4	54.7		8.8	59.0	38.4		9.5	52.1	53.8		9.1	57 29.2	40.6	K	9.4	42.3	43.4	
9.1	36 11.4	26.1		8.0	1 12.3	8.2	K	9.5	28 9.8	23.1		8.8	35.3	51.8	B	9.4	58.8	31.2	
9.5	37 33 3	58.8		9.2	12.7	25.9		9.5	24.1	54.8		9.5	40.0	0.2		9.3	19 26.8	51.7	B
9.4	38.6	54.8		9.5	2 1.7	59.0		7.5	36.6	1.3	K	9.4	58 39.1	43.5	B	9.4	55.9	52.3	
8.7	43.5	6.5	K	9.2	4.5	42.9	K	7.0	39.2	1.1	K	9.5	59 13.4	1.7		9.5	20 3.9	10.4	
8.3	46.0	19.2		9.5	33.5	32.7		9.4	30 34.5	4.4	B	8.2	19.6	59.1	K	9.2	48.0	57.9	
8.2	58.3	3.2	K	8.8	34.7	21.7		9.5	31 4.4	17.5		8.8	35.6	0.7	K	9.5	21 26.8	16.8	
9.3	38 24.6	22.3		9.0	3 57.1	44.9	K	9.5	13.0	46.9		9.1	57.2	41.2		9.2	34.3	4.1	
9.2	29.3	1.0		9.5	4 11.7	7.2		9.4	24.0	40.9	B	9.3	0 7.2	57.5		9.3	22 5.6	30.1	B

501—560				561—620				621—680				681—740				741—800			
	3ᵘ	+24°			3ᵘ	+24°			3ᵘ—4ᵘ	+24°			4ᵘ	+24°			4ᵘ—5ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	22 7.2	1.1	R	9.5	37 58.1	30.2		9.4	57 23.5	57.1		9.1	33 51.7	25.2		9.5	56 15.2	32.5	
9.0	33.7	43.5	K	7.5	38 21.5	4.2	h	9.3	38.2	29.1		9.5	34 38.0	53.5		9.4	32.7	33.9	
7.8	38.1	45.9	K	8.4	24.2	21.9		9.3	58 2.9	20.5		8.8	36 31.5	7.7	K	9.4	42.3	39.7	
9.5	23 33.0	39.6		9.5	25.3	11.1		9.4	19.4	13.9		9.5	32.0	14.2		9.4	44.0	14.8	
9.3	25 23.8	51.5		9.2	31.0	51.2		9.3	59 30.0	14.6		9.5	52.4	5.7		9.2	57 7.9	3.4	K
8.8	35.6	6.3		8.0	45.5	8.0	h	9.5	0 38.7	53.6		9.2	38 38.9	5.8		9.1	17.5	53.5	
9.5	26 5.8	29.3		8.6	47.3	12.5	h	9.2	1 20.5	6.2		9.5	40.2	27.6		9.5	21.4	59.5	
9.2	44.9	47.5		8.4	39 5.6	56.1		9.3	23.6	48.1	B	9.5	39 20.7	55.8		9.0	51.5	25.2	K
9.5	50.2	26 6		9.4	11.9	40.9		8.7	50.0	59.2	K	8.0	43.7	29.7	K	9.4	54.5	30.2	B
9.5	53.8	48.9		9.5	22.3	53.1		9.3	2 5.2	11.8	B	9.4	56.6	35.6		8.8	58 3.6	11.4	K
9.5	27 35.4	33.3		7.0	27.1	32.2	B	8.8	3 7.1	29.1	L	9.3	40 3.8	11.4	K	9.1	19.7	41.9	
8.8	39.9	54.2		9.1	42.0	52.9		8.8	9.5	2.2	L	9.2	21.4	33.1	K	9.5	23.7	33.2	
9.4	48.8	41.4		9.4	40 32.4	11.2		8.5	17.6	11.5	K	9.5	59.2	35.3		9.0	48.8	37.0	K
9.3	56.7	43.7	B	9.2	54.6	10.9	B	9.5	47.6	58.2		9.5	42 10.0	3.4	B	9.5	59 13.6	36.0	
9.5	28 18.7	10.0		9.3	41 1.0	56.3		9.0	4 58.4	22.6	B	8.6	25.8	1.9	K	5.8	16.9	4.8	K
9.5	34.1	34.7		9.4	32.5	55.8		9.5	5 6.6	41.0		9.5	50.0	43.6		9.5	30.9	39.6	
9.4	41.0	24.7		9.0	36.3	12.7		9.5	12.1	55.4		9.5	43 6.6	11.4		9.5	32.7	42.4	B
9.3	43.1	21.7	B	7.7	49.7	3.1	h	9.4	44.7	49.8		9.5	29.2	42.9		9.3	40.7	53.0	
9.2	43.9	18.2	B	9.3	53.9	21.0		9.3	58.1	42.5		9.3	33.9	52.6	B	9.1	52.5	51.4	
8.4	44.7	7.2	K	9.2	42 21.8	56.4	R	9.5	9 4.2	22.0		9.1	44 21.6	44.9		9.3	0 4.2	41.6	B
9.1	29 14.5	47.8		9.2	31.5	8.9		8.9	12.6	12.6	R	9.5	26.5	6.8		9.5	7.0	6.7	
9.1	35.3	35.4		9.1	42.8	33.3		8.7	23.7	33.4	K	8.7	27.7	38.7	K	9.3	10.3	52.8	
8.3	59.9	7.3	K	7.7	44.8	43.7	K	8.2	39.0	37.9	K	9.5	45 5.3	55.5		9.5	11.3	8.9	
9.0	30 1.3	58.5		8.9	47.7	5.4		9.5	10 23.6	14.0		9.4	8.7	35.0		9.5	19.9	43.3	
9.2	10.0	38.3		9.1	43 6.9	39.4		9.3	11 51.5	8.6		9.5	46 32.0	13.7		9.1	23.0	16.1	
8.7	29.3	40.7	B	8.5	16.5	53.6	K	9.5	12 0.1	22.6		9.3	57.7	36.7		9.5	27.3	49.8	
7.7	31.7	13.6	K	7.5	31.4	45.0	K	9.5	14 4.2	50.6		9.4	47 23.0	1.0		9.5	43.7	9.1	
8.9	31 12.4	44.0	K	9.5	45.8	33.9		9.5	14.9	14.6		9.2	25.7	36.6	K	9.5	49.6	7.6	
6.7	32 8.6	51.0	K	9.2	44 12.0	15.3	R	9.5	15.5	25.0		6.5	26.5	22.1	K	9.4	1 13.7	55.7	
8.9	18.3	59.5	B	9.0	17.7	57.3	R	9.5	17.3	47.8		9.5	48 13.1	55.5		9.0	35.0	37.0	
9.5	28.4	14.2		9.4	48.2	9.7	R	9.5	25.9	27.1		8.7	16.9	31.5	K	9.5	45.2	33.4	
8.8	35.4	25.0		9.5	54.5	45.7	R	9.5	28.5	56.1		8.9	17.4	44.3		8.3	51.3	57.0	K
8.2	40.8	32.5	K	9.3	45 33.6	9.1	R	9.5	43.6	58.8		9.3	21.1	5.9		8.8	56.4	40.7	
8.7	33 1.9	54.0	B	9.5	46 17.1	9.4		7.3	45.7	3.8	K	9.2	37.8	9.6		8 8	2 2.1	13.1	
9.5	34 0.3	4.8		8.7	26.0	39.5	K	9.2	15 54.6	49.5	K	9.5	58.3	38.7		9.4	28.5	14.6	
9.1	17.6	1.8	R	9.5	36.0	11.8		9.4	16 1.7	1.8		9.5	49 3.7	57.4		9.0	28.7	12.9	
7.3	35 3.7	36.5	K	9.5	47 31.5	58.8		9.5	18 26.7	2.4		6.0	17.9	49.5	K	9.5	33.0	6.8	
9.3	6.6	57.0	B	8.0	48 28.5	52.3	K	8 8	46.1	44.2	K	9.5	55.8	47.0		9.5	37.7	49.3	
9.0	12.4	48.8		6.8	46.4	4.0	K	9.0	19 3.8	6.6	B	8.0	50 2.2	16.1	K	8.9	50.6	35.0	K
8.0	21.6	5.8	L	9.4	49 46.1	16.3	B	9.5	21 11.9	56.7		9.5	54.6	6.3		9.5	58.4	34.5	
9.5	26.4	5.1		8.8	50 29.0	19.5	R	9.5	34.6	53.3		9.5	51 8.0	12.9		9.5	3 8.1	42.9	
9.5	34.8	17.7		8.3	30.1	47.9	K	8.2	22 29.0	42.5	K	8.2	23.7	55.6	K	8.0	22.9	6.3	K
8.9	40.5	24.4		9.0	32.5	38.2		7.3	23 34.2	52.4	K	9.5	52.4	47.2		9.5	53.2	38.4	
9.5	47.5	7.8		9.0	52.8	27.4		9.3	50.9	48.5	B	9.4	53.9	46.4	B	9.3	54.0	58.3	
9.4	36 1.3	21.5		8.5	51 11.9	16.4	K	8.8	25 4.6	11.9	K	9.5	52 25.1	35.3		9.5	4 4.7	47.0	
6.3	31.8	22.8	h	9.3	52 57.5	20.1		9.1	29.5	39.4		8.4	45.5	27.0	K	9.5	5.6	39.4	
5.0	35.4	0.8	h	9.0	53 24.7	5.3		9.5	49.2	40.8		9.5	47.2	7.4		7.8	12.5	13.9	K
8.9	41.0	28.0		9.5	50.5	52.0		9.3	26 27.0	38.7		9.5	53 9 4	8.5		9.0	45.1	57.2	
9.2	44.1	25.3		9.5	54 3.3	32.3		9.5	27 8.0	46.4		9.5	29.0	38.7		9.4	50.7	22.5	
8.8	55.8	0.7	h	9.5	12.9	14.9		9.5	46.1	58.0		8.5	33.0	16.3		9.5	52.3	29.1	
9.2	37 1.0	27.0		9.5	20.7	1.0		9.5	28 32.1	55.9		9.5	36.8	23.8		8.8	5 0.9	42.6	K
9.1	1.7	10.2	B	9.5	24.5	16.7		8.9	29 21.9	15.3	K	9.5	49.3	25.6		9.3	3.8	25.9	
7.0	16.1	5.5	h	8.4	36.8	56.2	K	9.0	30 6.9	28.0	K	8.3	56.1	5.6	K	9.3	19.2	57.0	
8.2	16.8	56.3	L	8.5	55.0	32.3	K	6.3	34.0	56.3	K	9.3	56.2	27.8		9.5	40.7	44.4	
9.3	18.7	35.4		9.5	55 20.3	29.3		9.1	31 30.7	46.7		9.2	54 6.0	31.6		9.5	49.0	30.6	
7.0	25.1	4.0	h	9.0	52.5	55.5		9.4	45.2	9.2	B	9.5	8.1	33.0		9.5	6 4.7	20.8	
9.5	25.5	33.6		9.0	56 49.1	52 4		9.5	32 56.1	52.9		9.0	10.4	38.6		9.0	22.1	48.6	
9.4	25.5	31.6		9.5	59.9	4.5		9.2	58.7	21.9	K	8.8	30.0	15.8		8.8	27.7	21.5	
9.5	34.5	47.2		9.5	57 5.8	43.7		9.2	33 8.2	32.3		8.0	58.0	47.5	K	9.5	31.7	35.9	
9.4	53.6	24.7		9.0	22.3	20.0	B	9.5	42.3	34.9		9.5	55 34.6	3.4		9.3	31.9	14.2	

5° +24°

801—860				861—920				921—980				981—1040				1041—1100			
	5ᵘ	+24°			5ᵘ	+24°			5ᵘ	+24°			5ᵘ	+24°			5ᵘ	+24°	
m		′		m		′		m		′		m		′		m		′	
9.1	6 38.2	0.7		9.4	25 28.8	4.3		9.5	33 9.0	18.9		9.5	41 47.4	46.1		9.4	48 48.6	55.6	
9.5	47.7	21.5		9.1	30.7	45.2		9.5	19.0	25.6		9.5	54.8	35.2		9.1	50.0	17.0	
8.8	58.9	40.1		9.4	30.9	51.9		9.5	21.2	10.0		9.5	42 4.5	24.6		7.6	49 5.8	35.5	K
9.5	7 48.5	48.0		9.4	33.2	15.6		9.5	27.1	16.5		9.0	5.7	53.5		9.5	34.6	30.4	R
9.5	58.7	54.5		9.5	42.9	39.4		9.5	50.0	59.0		9.5	17.7	25.6		7.5	43.4	47.0	R
9.5	8 1.4	22.8		9.0	26 9.8	23.3		9.5	58.1	9.8		9.3	20.4	41.1		9.5	50 1.5	3.6	
8.8	4.3	56.6		9.4	11.5	30.8		9.5	34 20.6	44.1		9.5	33.7	35.5		9.4	13.7	51.4	
9.4	25.6	34.6	B	7.8	12.0	11.3	K	9.3	21.4	36.7		9.5	42.9	21.8		9.4	17.4	12.7	
9.5	26.0	44.8		8.6	28.3	55.4		9.3	22.9	28.4		8.7	45.2	39.7	K	9.5	47.6	14.6	R
9.1	9 3.6	54.2	B	8.8	39.7	25.6	K	9.5	29.8	9.7		9.3	54.5	28.6		9.5	55.5	10.0	
9.4	24.7	59.0		8.9	54.5	49.3		7.9	34.3	0.8	K	9.4	43 0.0	55.3		9.3	51 12.8	30.2	
9.1	26.4	29.0		9.5	59.0	57.9		9.3	38.8	56.4		9.4	15.6	36.8		8.5	18.9	56.6	R
9.5	35.8	3.6		8.3	27 4.3	38.8	K	9.1	39.7	50.6		9.5	18.9	21.1	B	9.5	20.6	39.2	
9.5	42.2	54.4		9.4	10.7	25.7		8.6	47.4	59.8		9.5	23.8	6.2		9.0	25.7	14.1	R
9.5	10 9.1	36.3	B	8.8	14.6	23.0	K	9.3	35 5.9	36.8		8.6	37.7	5.3	R	8.5	39.7	45.6	K
8.6	35.4	29.1	K	9.2	15.4	26.5		8.9	13.0	35.1		8.8	42.7	10.8		9.5	47.1	27.6	B
9.0	11 9.0	15.6		9.4	22.8	20.7	B	9.2	21.3	4.9		9.5	57.4	49.3		9.3	50.7	4.8	
8.4	15.2	52.9	K	9.5	26.9	0.5		9.5	21.7	17.5		9.5	58.5	55.3		9.5	51.8	14.4	
8.9	16.6	20.8		9.5	28.2	41.4		9.4	25.8	0.8		9.5	44 2.3	3.4		9.3	52 9.0	45.9	
9.5	12 18.5	4.2	B	9.4	28.7	52.9		7.9	43.1	50.6	K	9.5	7.2	32.0		9.4	12.2	3.4	
9.5	59.7	19.5		9.0	34.8	3.9	R	9.2	36 12.4	26.7		9.4	8.9	39.9		9.5	23.9	38.8	
9.5	13 14.7	24.4		8.2	35.2	16.0	K	8.0	17.0	37.0	K	9.4	9.5	33.0		9.0	23.9	24.1	R
9.5	52.5	0.8		9.5	38.6	16.0		8.5	21.0	21.2		9.5	12.7	56.3		9.5	32.1	28.5	
9.1	53.9	56.3	K	9.5	53.5	39.7		9.5	23.8	26.0		9.5	19.2	31.2		9.2	51.7	41.4	
9.5	14 51.8	19.4		9.5	58.4	10.4		9.4	34.3	0.8		9.4	23.0	13.3		9.3	52.2	58.7	R
8.2	15 8.2	49.2	K	9.5	59.5	41.9		9.4	35.2	25.4		9.2	25.0	2.6		9.2	52.5	17.0	B
9.5	16 27.4	9.2		9.5	28 5.2	18.5		8.9	35.5	43.2		7.8	40.7	15.0	K	9.0	54.0	33.0	R
9.5	30.0	13.2		9.3	5.6	28.1		9.1	48.0	37.8		9.4	50.8	0.2		9.5	53 9.5	50.3	
9.5	58.0	9.7		9.0	16.9	8.3		9.4	37 2.9	27.5		9.5	45 7.2	14.4		9.4	10.0	46.5	B
9.5	17 22.2	57.3		9.3	20.7	52.8		8.0	5.1	9.7	L	8.7	12.2	3.3	K	9.2	11.5	32.8	R
8.2	48.8	52.8	K	9.5	20.7	39.3		9.3	21.4	10.7		9.0	25.8	17.6	B	8.7	30.8	45.9	R
9.3	53.5	47.9		9.4	34.9	59.2		9.4	40.5	27.0		9.5	45.3	37.2		9.4	53.7	54.4	R
8.6	18 18.6	4.8		9.3	36.4	22.5		9.2	44.6	31.7		9.3	52.2	59.4		9.5	54 7.1	51.6	
9.5	22.7	25.7		8.8	29 2.5	7.8		9.3	47.3	22.5		9.5	57.9	50.9	B	9.0	17.7	17.1	
8.7	39.8	36.2	B	8.8	14.8	13.2		9.5	38 13.1	30.4		9.1	46 9.9	50.9	B	8.9	19.0	12.4	
8.8	50.4	12.3		9.5	30.6	7.5		8.8	20.4	35.5	R	9.5	34.5	0.2		9.0	25.2	59.6	K
9.5	53.8	37.0		9.1	33.3	54.1	B	9.4	29.3	52.0		9.5	41.4	40.5		9.5	25.8	47.5	R
9.5	19 6.7	11.3		9.5	36.7	54.6		9.4	39.4	59.6		9.5	52.8	57.0		9.3	42.5	49.5	R
9.3	42.5	30.6		9.5	41.7	25.6		9.5	46.6	54.4		9.1	53.0	44.9		8.8	55 5.7	43.6	R
9.0	20 15.8	5.7		9.5	54.7	11.1		9.5	51.7	25.8		9.5	56.6	3.3		8.9	11.2	58.7	R
9.5	21 7.8	10.3		9.5	55.2	12.2	B	9.0	55.5	1.1	K	9.5	57.5	13.4		9.4	43.0	0.4	B
9.5	39.8	53.3		9.4	30 3.9	55.3		9.4	57.7	54.6		9.2	47 0.4	59.7	B	9.5	43.5	21.3	
9.0	41.7	41.7		9.4	9.6	54.1		7.0	39 1.2	37.8	L	9.2	10.8	0.7		9.5	58.1	3.5	
9.4	53.3	12.9	B	9.4	10.7	17.5		9.0	2.3	25.2	R	9.5	19.7	27.0	R	9.5	58.8	1.8	
9.5	22 55.7	10.9		9.5	18.7	7.6		8.0	3.6	35.8	L	9.4	20.5	28.6	R	9.4	56 2.9	31.8	
8.9	23 5.2	52.7	B	9.5	39.0	8.4		9.4	36.8	44.2		9.5	36.5	37.4		8.7	15.7	20.4	K
8.8	16.2	52.5	B	9.4	55.6	31.6		8.7	39.8	14.8		9.5	38.3	19.1		9.5	49.4	9.0	
9.5	26.7	41.8		9.4	58.8	27.2	R	8.5	40.7	29.4	L	9.5	46.0	38.0		9.5	52.3	19.7	
9.5	24 0.5	5.7		7.0	31 0.2	8.4	K	9.1	41.2	32.1		9.2	47.4	23.2	R	9.5	57 6.7	58.6	
8.4	12.8	15.6	K	9.5	15.7	28.2		5.3	40 7.3	30.9	L	9.5	48.6	31.7		9.5	41.7	27.5	
9.4	20.3	0.3		8.9	21.2	53.2		9.5	20.1	15.8		9.5	59.6	52.3		9.4	46.5	17.6	
9.4	22.4	37.5		9.4	22.7	25.5	R	9.2	24.8	9.3		9.4	48 0.2	57.7		8.6	48.1	45.5	K
9.5	27.7	59.3		7.2	24.8	27.4	K	8.0	27.7	10.6	K	6.0	3.1	13.2	K	9.2	48.8	59.2	
7.0	37.1	31.1	L	9.5	36.3	20.2		9.2	33.5	46.9		9.2	9.6	35.4	R	9.1	50.5	7.8	
9.5	40.7	33.4		9.5	42.9	35.5		9.5	42.4	23.9		9.2	10.4	52.6		8.7	59.6	19.5	
9.5	52.7	33.1		9.5	43.4	42.2		9.5	58.7	52.8		9.2	23.5	58.6	B	8.8	58 1.5	33.0	
9.5	55.6	55.3		9.4	32 13.0	47.6		9.4	59.5	3.9		9.5	32.3	26.9	R	9.5	9.4	30.6	
9.5	25 5.7	8.4		8.2	13.4	15.7	K	9.5	41 18.0	37.5		9.3	32.4	10.1		9.4	20.5	13.6	
9.5	15.7	18.3		8.9	48.9	13.2	K	9.2	32.3	21.1		7.5	42.7	35.3	K	9.5	36.7	58.0	
9.2	28.7	48.9		7.8	33 3.9	14.2	K	8.8	43.2	5.3		8.5	43.9	44.2	K	9.5	37.7	53.0	B

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ—6ᵘ	+24°			6ᵘ	+24°			6ᵘ	+24°			6ᵘ	+24°			6ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	58 38.6	4.9		8.8	3 56.7	27.0		9.4	12 58.7	16.0	B	9.0	20 46.6	33.9		9.5	30 22.3	12.0	B
9.4	41.9	28.9		9.5	4 8.7	4.5		9.5	13 1.7	19.7		9.2	48.2	26.0		9.4	23.9	30.5	
9.3	44.0	10.0		9.3	45.4	10.7		9.3	3.0	6.6		9.2	55.7	57.7	B	6.8	38.6	43.3	K
9.5	52.7	10.7		9.3	46.6	32.9		9.4	13.4	24.8		9.5	56.0	53.5		9.4	53.5	0.9	
9.3	54.2	12.4		8.8	47.2	42.3	K	9.5	16.6	53.2		9.1	21 6.4	35.1		8.9	31 4.4	9.2	
9.3	59.4	14.4		9.5	5 15.0	0.0		9.2	21.7	18.6		9.5	7.4	46.8		9.5	12.4	51.0	
9.5	59 8.7	37.3		9.5	15.7	20.1		9.5	23.3	3.0		9.5	9.7	26.0		9.3	34.2	28.1	B
9.4	10.4	10.6		8.0	17.4	1.5	K	9.3	39.7	6.7		9.3	17.1	2.5		9.5	48.7	40.7	
8.9	12.8	54.9		9.3	32.8	40.3	B	9.5	40.5	52.9		9.5	19.5	6.7		9.0	53.4	49.5	
9.4	15.6	58.6		9.5	38.7	26.1		9.3	47.7	6.2		9.2	29.8	55.6		9.5	54.4	4.1	
9.3	16.1	56.3		9.4	41.6	45.5		9.5	58.9	7.3		9.5	43.4	53.0		9.5	32 4.2	16.9	
9.4	22.0	36.0	B	9.5	48.4	8.6		9.3	14 4.0	46.3	B	9.3	47.0	40.3		9.4	15.4	23.0	
9.5	33.3	21.1		9.5	6 3.7	39.5		9.5	9.7	39.7		9.5	50.2	12.9		8.8	18.5	47.7	K
9.3	33.8	20.6	B	8.5	10.7	35.8		9.5	11.6	53.6		8.7	57.7	28.5		8.5	21.2	13.2	
9.5	37.9	22.0		9.2	19.7	3.7		9.4	12.8	50.3		9.5	22 25.9	10.2		9.5	21.3	4.4	
9.5	39.6	27.9		9.0	58.5	6.4	K	9.5	13.6	47.5		9.4	33.7	20.3		9.5	21.8	2.6	B
9.5	46.4	25.2		9.5	58.8	55.0		8.5	16.7	35.7		9.5	38.6	24.9		8.0	22.8	5.8	B
9.4	51.2	12.5		9.0	7 1.7	10.4		9.5	18.1	14.8		9.5	23 17.5	26.0		9.3	41.6	44.0	
9.3	54.2	6.7	B	9.5	5.6	25.7		9.0	24.2	11.6	K	9.5	19.4	1.3		9.3	44.9	31.7	
9.5	55.5	26.3		9.0	13.8	15.1		9.0	32.6	21.6		9.1	24 8.8	23.5		9.3	33 3.4	3.9	B
9.1	56.4	30.8		9.5	23.7	50.1		9.1	36.8	6.4	B	9.3	14.0	31.0		9.4	5.0	3.8	B
9.4	57.4	6.1		6.5	28.0	0.4	K	9.2	36.9	3.9		9.5	23.5	47.3		9.5	15.4	49.5	
8.5	0 3.5	22.4	K	9.5	36.1	12.1		9.5	40.5	50.5		8.8	26.8	8.6	B	9.5	20.8	56.1	
9.3	7.7	16.8		9.3	39.7	6.4		9.5	47.6	20.1		9.5	36.1	48.8		9.5	21.7	26.5	
9.4	21.2	25.9		9.5	53.7	7.4		9.4	15 3.7	5.5		9.2	55.4	9.9		9.0	32.4	52.7	
8.2	22.7	26.7	K	9.5	8 2.0	17.5		9.5	11.3	58.9		9.3	57.7	16.1		9.4	43.3	15.4	
9.3	24.3	38.3		9.2	19.6	41.2		9.5	13.6	35.9		9.5	25 12.0	49.4		9.3	49.4	50.2	
8.5	27.4	35.3		9.0	40.8	35.3	K	9.5	22.7	23.8		9.2	14.7	24.7		9.5	34 2.7	58.1	
9.3	31.6	19.4		9.5	42.8	55.7		9.5	34.7	5.6		9.2	15.2	8.9		8.8	9.3	16.1	
9.4	33.5	23.0	K	9.5	53.2	21.8		9.2	37.3	0.1	B	9.3	17.7	20.7	B	9.5	12.6	5.7	
9.3	34.9	15.5		9.3	9 27.5	35.9		8.8	38.6	50.0	L	9.4	17.9	16.9		9.5	39.2	13.4	
9.3	37.0	44.7		9.5	33.2	50.7		9.5	41.7	10.8		9.2	20.8	36.5		9.4	41.3	5.6	B
9.3	50.1	9.8		9.5	38.7	59.8		9.4	42.5	1.3		9.2	55.5	15.5		9.3	56.3	53.9	
9.5	54.7	57.0		9.5	40.6	30.9		9.4	53.6	46.9		9.3	57.0	10.5		9.5	35 7.5	27.0	
8.4	55.9	13.5		9.5	43.9	29.2		8.0	16 8.7	22.4	K	9.1	26 1.4	24.0		8.5	14.7	41.5	
9.4	56.0	22.0		9.5	45.0	56.5		9.3	10.0	13.5		9.2	5.9	23.8		9.5	18.8	34.4	
9.3	1 1.5	43.5		9.5	53.7	24.0		9.5	15.3	59.5		8.6	9.4	44.5	L	8.7	21.9	1.8	K
9.0	2.4	38.2	B	9.5	10 18.1	45.8		9.3	29.8	44.7		8.9	15.5	5.7	K	9.0	25.9	28.7	
9.4	4.8	55.5		9.5	20.6	4.5		9.5	39.1	14.4		9.5	28.0	11.1		9.2	30.2	41.8	B
9.3	17.7	53.2		9.4	24.9	57.2		9.5	46.7	5.1		9.5	52.2	17.5		9.5	30.3	56.4	
9.5	21.6	25.8		9.5	37.0	42.6		9.3	17 2.7	27.8	B	9.0	27 42.9	32.1	K	8.9	43.0	14.0	B
9.5	29.1	7.0		9.2	56.7	10.5		9.4	4.4	55.5		8.8	47.2	17.8		9.5	55.5	58.6	
9.1	34.2	33.5		9.5	11 3.8	53.0		8.9	22.9	47.5	B	9.5	54.3	55.4		9.5	36 5.4	10.7	
9.5	44.2	57.9		9.5	12.2	17.5		9.1	55.7	50.0	B	9.5	58.0	16.5		8.9	11.9	1.7	
9.5	46.8	22.3		9.2	12.2	43.9		9.2	18 1.8	18.3	B	9.5	28 7.9	30.0		9.5	12.0	29.2	B
9.5	52.7	30.3		8.0	12.2	36.7		9.4	6.7	25.6		8.8	14.9	31.0	K	7.8	30.5	48.2	L
9.5	2 7.4	38.3		9.2	35.4	32.6		9.3	9.7	6.8		9.5	24.5	8.0		9.3	30.8	54.7	
8.3	9.7	54.5	S	9.5	39.8	20.0		8.8	27.8	35.6		6.7	34.6	42.1	K	9.0	38.6	42.1	
9.3	11.4	12.6		9.5	39.9	26.2		9.5	32.5	17.4		9.4	47.1	0.1		9.5	41.9	1.9	
9.5	24.7	33.0		9.5	45.5	56.8		8.8	36.0	36.3		9.5	53.7	58.9		8.2	45.3	16.1	
6.7	38.9	26.7	K	9.5	49.7	23.7		9.2	51.6	24.5		8.7	29 7.9	57.5	K	9.5	37 4.4	14.5	
9.5	55.1	1.3		8.5	12 7.9	2.8	K	9.5	19 0.7	57.1		7.0	26.8	34.4	K	9.5	21.5	45.4	
8.6	58.7	44.6		9.5	15.7	42.7		9.2	6.8	20.3	K	9.4	33.0	53.4		8.9	39.3	14.2	
9.3	3 5.7	53.7		9.5	21.7	38.0		9.0	10.8	32.1		9.3	34.0	28.2		8.5	57.2	18.1	
9.5	10.8	53.8		9.5	21.7	25.7		9.5	14.5	40.7		9.4	46.6	56.4		9.5	38 1.9	55.2	
8.9	15.5	43.8		9.5	22.9	56.5		8.3	23.6	45.6		9.5	54.0	50.1		9.5	2.4	50.7	
9.5	27.4	58.1		9.1	25.7	27.9		9.5	26.3	54.7		9.2	30 5.4	51.1	B	8.5	8.2	20.3	
9.5	30.7	29.7		8.7	31.7	33.3	K	9.5	42.5	3.9		8.8	5.7	40.1	K	9.5	13.7	31.0	
8.8	35.2	57.2	K	9.4	52.6	26.6		9.3	20 1.7	6.7		9.2	8.4	59.0		9.0	16.0	25.0	
9.4	46.8	15.6		9.4	52.8	40.2		9.5	20.4	38.8		9.5	16.2	3.8		9.3	17.5	54.4	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ	+24°			6ᵘ	+24°			6ᵘ—7ᵘ	+24°			7ᵘ	+24°			7ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.9	38 21.6	59.1		9.0	47 27.7	37.1		9.2	56 34.3	56.8		8.8	6 16.4	28.9		9.5	14 57.3	44.0	
9.5	42.6	41.5		9.5	30.4	51.9		9.5	43.0	26.3		9.3	19.0	55.0		9.5	15 29.5	33.3	
9.4	50.4	11.4		9.0	33.1	20.8	K	8.9	49.9	31.5		7.7	43.0	6.3	L	9.5	45.3	15.8	
8.6	39 8.2	18.3	K	9.3	41.1	23.8		9.5	57 2.3	54.0		9.5	59.9	14.5		9.5	16 8.8	32.1	
9.5	21.5	12.8		9.2	41.5	7.5		9.5	8.5	4.6		8.8	7 10.4	35.5		9.1	27.1	48.4	
8.0	37.9	31.1	K	9.3	55.7	40.6		9.2	32.1	21.1		8.5	15.5	55.0		9.5	37.0	3.0	
9.1	49.4	8.9		8.7	56.5	28.5	K	9.5	35.5	4.6		9.4	17.5	51.0		9.4	37.3	8.7	
8.7	57.1	21.6	K	9.4	48 2.3	55.7		9.4	58 3.4	7.5		9.0	19.3	43.5		9.0	43.0	58.4	
9.3	57.1	45.0		9.2	4.6	4.6	B	9.3	3.8	10.7		9.4	35.6	16.4		9.5	48.4	24.0	B
9.5	40 19.8	33.3		7.0	8.4	49.8	K	9.0	26.0	7.2	B	8.3	49.6	7.7	K	9.5	50.7	9.0	B
9.5	23.6	3.5		9.5	15.6	9.1		7.1	27.2	23.2	B	9.1	55.3	43.0	K	9.4	17 5.9	3.0	
9.3	26.8	35.6		9.5	20.9	5.9		9.1	36.3	53.1	K	7.5	58.3	46.8	K	9.4	18.2	15.7	
9.5	49.1	23.0		9.2	24.9	7.4		9.0	38.3	47.6	K	9.5	58.9	57.5		9.5	28.8	43.0	
9.1	53.3	53.6	B	9.5	36.2	34.0		8.8	59.0	39.2	K	9.5	8 16.5	45.0		9.5	36.9	0.1	
9.4	41 4.6	3.5		9.4	50.0	26.0		9.5	59 6.3	4.0		9.0	29.6	25.8	K	9.4	39.2	8.6	
9.5	16.7	5.6	B	9.3	54.0	26.5		9.4	11.3	7.8	B	9.4	35.0	18.4	B	9.2	48.3	36.4	
8.3	25.2	19.3	K	9.0	57.6	59.3	K	9.5	30.1	42.6		9.4	44.9	54.3		9.5	58.6	55.5	
9.5	39.8	36.3		9.3	49 18.4	57.9		9.4	36.1	24.4	B	8.5	55.0	14.1	K	8.9	59.2	40.2	
9.3	40.6	1.3		9.5	22.6	2.1		9.4	37.0	32.0	B	8.3	57.0	47.5		8.3	18 11.4	13.7	K
9.5	42 18.7	22.6		9.5	27.0	26.7		9.5	0 33.3	35.4		8.5	9 16.0	19.3	K	9.1	30.0	4.9	
9.4	26.5	19.6	B	8.7	31.3	54.5	K	9.5	40.2	21.7		8.9	19.5	27.4		9.5	48.3	45.7	
9.5	29.5	15.6		9.5	35.5	46.2		9.5	56.6	5.6		9.3	21.3	36.8		9.5	19 0.6	6.0	
9.4	32.4	50.6		9.4	50 1.4	59.4		9.4	1 4.6	25.8		9.2	31.8	38.8		8.5	13.4	16.3	B
9.5	38.8	32.8		9.4	14.6	1.3		9.5	16.5	1.9		9.4	41.8	50.4	B	9.0	41.5	9.5	
9.5	40.4	10.1		9.4	29.3	15.1		9.5	39.0	33.3		9.5	46.4	56.8		7.6	51.1	57.0	L
9.3	48.8	57.4		9.4	49.0	27.2		7.8	41.4	19.6	K	8.9	47.5	40.3	B	9.2	52.7	56.3	B
8.8	51.0	47.9		9.4	51 15.6	42.8		9.3	2 16.1	3.3		9.5	47.8	41.0		9.0	56.5	34.3	
9.5	43 25.4	0.9		9.5	18.4	5.8		9.5	24.0	35.6		8.9	54.1	2.3		9.5	20 12.6	30.0	
9.5	40.4	8.4		9.5	40.0	27.7		8.3	24.5	54.0	K	9.4	56.1	1.3		9.5	18.3	18.5	
9.5	44 6.9	30.9	B	9.3	41.4	52.4		9.4	42.0	25.2	B	9.5	10 1.2	29.5		8.3	21.2	7.0	B
9.5	8.6	3.5		8.3	52 0.6	40.6		9.5	46.3	5.0		8.3	3.4	21.5	K	9.4	21.6	21.9	B
9.5	8.6	38.0		9.5	10.3	14.9		9.5	51.0	54.5		9.5	8.4	38.5		9.5	23.9	35.0	
9.1	15.6	1.5		9.5	21.2	19.3		9.5	52.7	36.9	B	9.5	9.2	12.2	B	8.6	35.0	43.0	B
9.4	20.3	19.4		9.5	28.1	6.2		8.8	3 24.0	52.9		9.3	24.0	40.1	B	9.4	51.4	48.9	
9.5	50.6	3.2		9.0	39.0	26.3	K	9.5	37.0	13.0		9.5	26.3	50.4		9.3	21 17.0	5.6	
9.4	55.5	59.4		9.2	39.4	51.9		9.0	37.3	25.8	K	9.4	34.7	14.7		9.3	53.0	24.0	
9.0	58.2	56.0		9.5	55.8	36.1		9.5	38.3	3.4		9.4	42.8	9.7		9.3	22 2.4	38.7	
9.5	45 0.2	55.8		8.0	53 7.8	32.9	K	6.0	38.3	22.1	K	9.4	11 1.7	10.7		9.5	6.3	57.9	
9.5	2.5	58.3		9.1	13.7	40.6	B	9.1	45.0	51.0	B	9.3	18.6	46.7		9.1	19.9	27.8	
9.0	2.5	34.6		9.5	14.3	12.4		9.4	51.0	7.5		9.5	28.2	56.4		9.1	21.0	25.0	
8.9	4.6	3.2	K	9.5	29.8	34.9		9.4	53.6	16.5	B	9.5	44.6	52.3		8.8	34.5	11.6	K
8.7	4.9	6.1	K	5.8	34.0	25.0	K	9.0	4 3.3	57.1		9.5	53.3	36.2		9.5	44.4	58.0	
9.3	12.4	50.1		9.1	55.6	42.3		9.3	3.6	51.4		9.5	56.5	3.6		8.0	54.7	18.8	K
9.2	15.5	56.5		9.4	54 1.5	48.2		8.8	3.7	20.7	K	9.0	59.8	19.1		9.5	55.0	2.7	
9.5	17.6	55.1		9.1	2.3	59.1		9.1	4.0	52.5		8.8	12 0.2	3.7		9.0	58.6	52.0	L
9.5	19.7	18.1		9.5	3.5	17.6		9.0	5.6	25.6	K	9.5	6.8	20.9		8.2	23 6.7	48.8	L
9.5	25.1	46.6		8.8	5.1	8.2	K	8.7	20.8	53.7	B	8.8	15.7	53.9		8.2	17.0	15.5	K
9.3	32.1	20.5		8.7	5.7	39.6		9.4	22.4	20.9		9.4	24.6	43.3		9.5	28.8	36.2	
9.1	33.9	31.0		9.5	20.3	53.7		9.4	37.5	1.5		9.5	27.0	23.6		9.1	49.0	24.8	
9.5	47.7	37.5		8.9	24.6	44.1		9.4	51.0	31.1		9.4	34.8	59.7		9.5	57.7	55.3	
6.8	52.2	25.5	B	8.9	36.4	48.1		9.4	51.4	15.6		9.5	56.9	54.4		9.3	58.8	5.6	
8.6	46 1.6	1.2	K	8.8	42.3	50.0	B	9.4	51.8	33.9	B	8.8	59.8	7.0	R	9.3	24 10.2	18.1	
9.3	18.4	52.3		8.6	51.8	35.4	B	9.5	5 8.2	34.9		9.5	13 13.2	17.9		9.3	11.8	12.3	B
9.2	19.2	46.6		9.5	55 6.4	51.2		9.1	15.0	17.5		9.5	25.0	50.1		9.1	23.2	20.5	B
9.5	34.5	45.8		8.3	10.0	26.3	L	8.5	25 3	14.8	K	9.5	35.3	24.0		9.4	37.9	26.7	
9.2	36.2	40.8		9.4	33.6	3.6		7.3	35.4	56.8	L	9.2	58.6	20.5		9.5	48.2	52.3	
7.5	46.4	11.2	L	9.5	46.4	46.8		9.5	44.3	59.9		9.5	59.0	3.6		9.5	54.5	13.7	
9.0	50.2	42.8	B	9.5	49.2	18.4		8.0	45.0	14.4	K	9.0	14 24.0	38.3		9.0	25 17.9	24.4	
9.3	51.9	29.7		9.0	52.6	38.5	B	8.5	50.9	3.5	L	9.3	34.3	38.6		9.4	41.9	35.0	
9.3	54.3	40.6		9.2	56.5	38.4	B	9.5	6 7.8	2.3		9.5	46.8	10.5		9.5	42.3	55.3	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ᵘ	+24°			7ᵘ	+24°			7ᵘ—8ᵘ	+24°			8ᵘ	+24°			8ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	25 45.5	46.3		9.3	35 56.7	56.5		8.8	51 39.7	12.0		9.0	4 51.8	21.3		9.3	22 59.5	25.2	B
9.3	48.5	36.8	B	9.5	56.8	11.6		9.5	46.8	51.3		9.4	5 8.2	57.7		8.7	23 40.2	37.5	K
9.2	48.8	9.9	K	8.6	36 11.6	40.5	K	9.5	57.5	24.4		9.4	22.6	20.2		8.7	49.4	13.8	K
9.4	50.7	50.2		8.7	22.0	28.8	L	9.5	52 35.6	42.4		9.5	28.3	52.8		8.8	51.1	28.1	
7.5	26 12.4	35.3	S	9.5	37 46.2	32.0		9.5	41.5	48.5		9.1	43.1	29.3		9.5	24 13.6	51.5	
8.0	16.2	14.7	K	8.6	54.7	11.2	K	7.8	50.7	18.8	K	9.4	6 9.4	42.4		6.5	25.5	34.5	K
9.3	37.4	44.3	B	9.5	38 5.6	15.0		9.3	51.1	22.5		8.8	26.4	46.4	K	9.5	59.6	11.0	
9.5	45.9	12.3		9.5	6.0	49.8		9.5	53 0.3	33.2		8.5	27.5	22.9	K	9.2	25 2.8	54.7	
9.5	46.2	45.3		7.8	28.3	0.8	K	8.8	22.8	15.4	K	8.3	30.1	11.1	K	9.5	40.6	11.7	
9.4	27 0.5	53.4		8.7	30.5	4.7	K	8.9	55.6	6.9		9.5	30.9	50.3	B	8.5	44.1	28.0	K
9.4	2.5	46.2		9.1	54.3	7.7		9.3	54 0.0	40.7		9.3	7 3.0	16.0		8.8	26 10.8	30.3	K
8.8	8.6	21.1	K	9.2	39 24.2	55.4		9.5	8.5	33.5		9.3	3.6	0.9		9.0	53.0	48.8	K
9.5	15.7	49.9	B	9.2	29.6	23.3		9.3	12.8	38.1		9.3	6.7	55.5		9.5	27 8.7	53.2	
9.5	19.2	11.3		9.5	49.3	43.4		9.3	15.9	54.4		9.4	24.5	23.6		9.5	16.1	38.4	
9.5	30.0	48.0		8.6	57.8	26.7		8.6	25.2	58.6		8.9	39.8	30.5		7.0	28.6	33.0	K
9.5	50.9	56.7		9.5	40 24.9	51.4	B	9.1	29.2	20.2		9.2	50.2	6.3		9.0	28 14.2	58.2	K
9.4	28 6.7	44.6		7.4	35.2	51.6	L	9.0	55 2.8	46.0		9.1	58.1	3.6		9.5	31.2	59.0	B
8.3	17.4	13.4	K	var	36.4	5.3		8.6	14.1	59.1	K	9.2	8 10.9	41.6		9.5	38.1	26.7	B
9.4	27.1	50.9		8.0	51.6	36.9	K	9.0	24.8	23.2		9.5	9 4.5	12.7		9.5	58.3	3.9	
9.5	32.9	24.5		9.5	41 6.0	0.9		8.0	26.7	54.4	K	9.4	28.6	11.0		9.3	29 10.2	36.8	
9.3	39.3	23.2	B	9.1	8.6	23.3		9.5	36.8	12.3		9.4	49.1	2.4		9.2	13.4	56.6	
9.5	40.2	16.6		9.1	32.4	47.2		9.1	58.5	8.8		9.5	10 28.4	8.9		9.1	24.0	48.4	B
9.5	47.5	14.8		8.7	35.4	53.6	K	7.8	56 1.5	45.7	K	7.5	31.2	37.4	K	9.0	38.2	11.0	
9.2	58.4	14.0		9.5	49.7	7.5		9.0	8.7	38.0		9.5	44.5	59.9		9.5	47.1	58.5	B
8.2	29 12.3	9.4	B	7.4	56.8	31.2	K	7.9	15.2	1.3	K	9.4	51.4	42.3		9.5	49.9	59.3	
9.5	23.9	20.5	B	8.2	42 2.4	8.7	B	9.5	45.5	15.5		9.3	52.5	41.5	B	9.5	51.4	15.4	
7.0	27.6	41.7	K	9.2	28.0	48.8		8.5	46.2	35.9	B	8.2	11 24.2	15.7	K	9.4	58.6	47.0	
8.7	53.6	7.4		9.3	33.2	8.4	B	9.0	58.2	53.3		9.1	38.6	43.9		6.5	30 14.9	11.3	K
9.0	30 20.2	39.8	K	9.5	43 2.0	35.9		9.2	57 1.1	51.9		6.0	55.0	28.6	K	8.5	26.4	56.4	L
9.0	26.6	34.2	K	9.4	37.8	50.5	B	9.5	8.8	5.3		9.4	12 43.6	1.2		9.5	45.9	23.2	
9.5	31 9.5	46.3		9.1	41.0	2.4	K	9.5	10.9	12.8		9.4	50.0	7.1		9.5	31 15.1	7.3	
9.5	13.5	39.2		9.5	42.3	11.6		8.4	12.5	27.3	K	9.3	13 1.8	41.2		9.5	47.4	52.2	
9.5	30.3	0.5		9.4	56.0	25.0		9.5	23.9	16.8		8.5	20.0	28.9		9.5	32 0.0	7.4	
9.5	43.0	27.4		9.2	44 10.0	7.0	B	8.9	32.4	2.9		9.5	33.5	26.9		9.2	33 5.4	34.3	
9.5	32 15.7	25.1		9.5	45 21.9	34.6		9.4	34.3	47.8		9.2	45.3	15.0		8.6	25.5	52.3	K
9.1	30.6	28.4		9.1	31.0	14.9		8.9	45.0	26.1		9.5	14 9.5	1.9		8.0	25.9	18.5	K
9.5	43.0	38.5		9.5	40.5	56.1		9.3	55.7	55.7		9.5	13.9	18.2		9.5	43.8	45.3	
9.3	55.6	39.5	B	9.4	45.9	30.3		8.5	56.1	33.5	B	8.2	55.7	0.2	K	9.3	50.4	6.6	
9.5	58.2	5.3		9.5	49.3	6.2	B	9.2	58 3.1	30.7		9.1	15 55.0	54.3		9.5	57.7	11.1	
8.2	33 14.3	23.0	B	8.3	46 10.8	33.6	K	8.9	8.3	27.5		7.0	16 19.4	24.7	K	9.5	34 15.0	43.3	
9.5	15.9	48.7		9.3	33.7	28.8		9.2	48.8	26.7		7.8	40.1	49.1	K	9.5	31.9	40.9	
9.3	22.4	43.0		8.2	47.9	44.3	L	9.4	59 2.4	17.0		8.2	46.6	1.0	K	8.8	56.5	30.3	
9.5	35.2	48.1		8.9	47 2.4	43.6		8.3	10.6	26.0	K	9.1	17 10.4	8.1		9.5	36 46.4	18.8	
9.5	43.0	10.9		8.6	8.1	36.3	B	9.5	11.0	3.1		9.4	18 16.1	27.1		9.5	37 23.0	21.3	
9.2	34 0.0	39.6	B	6.8	23.7	6.0	K	9.5	11.6	34.5		8.4	29.1	11.9	B	9.0	45.3	23.0	B
9.0	3.2	28.1		6.7	26.5	0.8	K	9.5	27.2	51.0		9.4	34.7	11.1		9.5	38 9.0	13.3	
9.4	13.8	20.9		9.5	30.3	9.8		8.7	31.3	5.7	B	9.5	46.5	13.0		9.5	20.0	13.3	
9.4	30.0	28.1		9.5	40.5	6.9		9.0	33.9	52.9	K	9.4	56.8	46.2		9.5	36.5	13.9	
9.5	46.3	34.2		9.5	47.7	25.7		9.5	43.3	50.8		9.5	19 56.7	9.0		9.5	57.3	8.9	B
8.8	46.4	10.9	K	9.5	48 42.6	28.5		9.4	59.2	26.2	B	9.5	57.5	18.3		8.5	39 10.4	33.2	L
8.6	52.1	7.2	K	8.7	48.0	53.1	K	9.2	0 44.7	8.3		5.8	20 0.2	37.3	K	9.2	20.4	0.7	
9.5	53.7	58.2	B	9.3	49 31.3	49.1		9.1	49.3	3.0	B	9.5	24.4	30.8		8.5	40 4.8	38.2	K
9.5	35 4.9	58.0		9.5	48.3	48.4		9.1	1 43.8	20.9		9.5	35.0	4.1		9.5	7.2	58.1	
9.5	13.1	11.6		9.5	56.5	16.5		9.3	2 4.2	15.0		7.0	21 4.0	49.8	K	9.3	33.7	28.4	
7.9	14.7	35.4	L	9.0	50 21.3	35.8		9.5	48.8	32.7		9.1	6.2	5.1		9.5	41 29.4	3.8	
9.0	14.9	47.6	B	9.0	24.0	42.5		9.2	3 0.3	37.5		9.4	13.6	41.2		9.4	30.9	47.0	
9.4	23.9	50.5		9.4	31.8	1.5		9.5	13.4	1.5	B	9.5	22 14.9	42.2		9.0	42 59.5	35.7	
9.4	26.2	15.5		9.1	54.2	15.8		9.1	42.4	53.7		8.8	39.3	53.8		9.3	43 21.9	10.8	
3.7	42.7	46.6	K	9.5	51 4.2	8.5		9.5	4 41.5	42.9		9.5	42.4	7.0		8.0	38.7	50.8	K
9.5	48.3	14.1	B	8.8	10.0	28.0	K	9.5	50.9	5.5		5.8	55.5	34.0	K	9.0	42.0	15.4	K

2001—2060					2061—2120					2121—2180					2181—2240					2241—2300				
	8ˢ—9ˢ		+24°			9ˢ		+24°			9ˢ		+24°			9ˢ—10ˢ		+24°			10ˢ		+24°	
m		′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.1	43	43.5	30.9	B		8.9	6	36.1	42.2		8.5	34	34.1	15.2	L	9.1	59	22.8	33.2		9.5	25	20.1	55.1	B
8.9		51.9	30.0	B		9.0		58.0	34.0		8.9		59.6	55.3		8.9		29.1	25.9		9.4		36.0	24.3	B
9.1	44	25.9	34.9			8.5		58.6	22.3		8.7	35	5.3	27.2	L	9.4		35.5	41.9	B	9.5		44.1	32.5	B
9.4		46.6	43.9			9.5	7	41.2	36.5		9.5	36	6.2	42.7		9.1	0	7.5	37.6		7.0		50.3	6.4	K
9.5	45	6.0	13.6			7.0		50.1	1.1	K	9.2		41.2	16.2	B	7.1		38.3	12.1	K	9.4		58.0	20.0	
9.0		25.7	38.7	L		9.5	8	2.6	2.0		9.4		49.7	42.3		9.4		43.0	14.1	B	9.5	26	2.1	49.0	
9.5		51.5	35.4			9.3		26.9	31.3		9.4		53.7	38.6		9.5	1	5.0	14.6		9.5		25.6	22.6	
9.1	46	8.4	45.7			7.3		56.9	15.4	K	7.0	37	1.3	8.0	K	9.5		41.0	23.6		8.9	27	15.5	18.0	
9.0		28.4	35.2			9.5	10	37.9	19.2		3.2		36.7	26.8	K	7.8	2	29.8	36.0	K	9.5	28	22.0	22.9	
9.2		32.8	55.0			8.8	11	13.0	52.3		9.4		41.5	35.5		9.4		45.1	54.4		9.1		54.1	13.5	R
9.5		42.5	20.6			9.5		45.9	7.9		9.0	38	11.3	35.0		9.2		48.7	42.5	B	7.7	29	18.7	12.1	K
9.4		48.8	55.6			9.5	12	51.8	56.0		9.5		17.5	53.2	B	8.4	3	35.9	50.3	K	9.5		34.1	26.0	
9.1		55.3	25.3			9.5	13	21.9	54.6		6.7	39	9.5	18.4	K	8.3		46.1	28.4	K	9.5	30	48.9	11.2	
9.4	47	38.9	5.4			9.2	14	22.8	48.4		9.5	40	1.8	20.1		9.3	4	7.7	53.2		9.3	31	30.8	37.3	
8.6		55.5	29.5	K		9.3		35.0	9.9		9.4		2.3	40.5		8.8		14.3	15.3		9.2	32	40.5	20.5	
9.3	48	48.9	0.9			9.4	15	5.5	48.3		9.5		6.0	15.3		9.4		50.8	44.2		9.2		40.8	4.1	
9.5	49	12.2	44.5			8.1		9.4	56.2		9.5		27.9	52.5		9.5	5	17.5	43.2		8.8		46.8	7.7	K
9.5		17.1	53.5	B		9.4		22.5	39.1		9.5		57.6	36.7		9.4		21.5	14.6		9.5		47.5	50.4	B
8.5		36.4	39.1	K		9.4		26.5	8.4		9.0	42	24.5	20.1		9.5		45.4	51.8		9.0	33	10.4	56.6	
9.5		52.6	6.8			7.0		58.3	11.7	K	9.3		28.9	58.8		9.2	6	0.8	31.8		8.7		24.1	43.7	K
9.0	50	3.9	46.0			9.5	16	34.5	51.2		9.5		31.1	33.6		9.5		3.5	51.8		9.5	34	19.6	19.1	B
7.5		17.8	31.8	K		9.3		39.7	43.3		8.6		46.1	31.8	R	9.4		20.7	13.6		9.2	35	27.3	3.8	
8.9	51	36.0	55.3			9.3	17	21.0	26.4		9.4	43	13.0	20.1		8.8		43.1	36.0		9.4		37.1	24.6	
9.5		58.7	16.4			9.5		58.6	27.1		9.5		13.1	48.7		9.2		59.1	15.7		9.3		45.7	6.5	
9.0	52	2.4	10.9			9.5	18	22.0	10.9		9.2		13.2	59.6		9.2	8	19.3	1.6		8.7	37	31.5	20.7	L
8.6		18.5	21.6			9.5	19	48.9	37.0		9.5		34.5	36.3		9.0		27.0	56.7		9.5		44.8	23.7	
9.3		27.5	51.1	B		9.5	20	20.0	9.8		9.5	46	21.5	13.6		7.0		30.2	14.3	K	9.4		58.5	18.3	
9.5		46.6	4.6			9.1		22.2	21.6		9.4		23.1	8.2		9.1		32.8	39.0		9.1	38	32.7	10.6	
9.2	53	0.7	0.6			8.9		24.3	26.0		9.4		52.8	19.5		3.5		37.3	8.3	K	8.5		52.8	54.6	
9.5		6.4	11.6			9.5		39.5	49.5		9.5		59.5	42.5		9.3		59.1	21.5		9.3	39	30.1	44.2	B
9.5		10.9	56.0			9.3	21	11.1	57.6		9.5	48	4.0	37.6		9.5	9	33.0	58.6		9.5		53.5	43.7	
9.4	54	4.9	41.8	B		9.1		13.4	22.5		9.2		20.4	26.0		9.1		38.5	32.2		8.5	40	0.5	6.0	
9.5	55	2.5	28.5			9.5		14.5	52.6		9.5		22.8	0.1		8.9		46.3	33.2		9.3		1.8	22.0	
9.5		56.7	21.6			9.5		29.8	37.2		9.5		27.4	4.9	B	9.5	15	24.2	3.7		9.5		53.1	22.4	
9.3	56	16.4	5.4			9.5		36.7	40.0		9.5		53.6	19.1		9.5		34.1	24.8	B	9.2	41	25.4	53.5	
9.5	57	1.9	57.6			9.5	22	15.0	42.5		8.5		56.1	42.5	K	9.5	16	1.1	36.6		9.4		42.6	15.1	
9.5		6.4	43.1			9.5		31.5	37.0		9.0	49	46.5	29.0	R	9.0		2.0	27.1	R	9.5		57.3	9.0	
8.5		40.1	18.8	K		9.4	23	22.3	21.3		9.2	50	10.8	18.8		9.5		16.6	51.8		9.5	42	38.4	38.0	
9.0		43.4	1.8	K		8.9		45.8	25.6		9.5		31.3	5.4		9.1	17	28.0	5.6		6.8		46.5	10.8	K
8.6	58	16.5	57.8	K		9.3	24	18.4	48.8		9.5		32.5	24.7		9.3		48.1	53.2		8.8	43	20.2	16.8	L
9.0	59	43.9	27.4			9.5		54.2	48.4		9.4	51	46.1	44.9		9.5	18	40.5	53.8		8.9		33.0	10.3	L
9.5		52.3	10.6			9.1	25	30.9	55.4		9.5	52	19.4	49.6		8.8	19	14.9	8.4		9.5		43.3	56.3	
8.6	0	49.1	5.0	K		9.2		39.7	52.5		9.0		30.4	14.7	L	9.0		19.2	26.3	B	9.5	45	31.7	59.7	
9.5	1	3.3	34.7			6.5		43.9	5.1	K	9.5		34.1	52.2	B	9.5		52.1	53.9		9.3	46	27.6	45.5	
9.5		54.4	19.8			8.9	27	37.7	40.6		9.5	53	10.1	42.5		9.2	20	3.7	4.0		8.5		58.2	31.4	
9.1	2	7.7	8.5			9.3		39.2	26.2		9.1		28.4	32.5	R	9.0		31.2	6.5		9.5	48	16.4	28.1	
9.5		22.8	46.0			9.1		52.7	19.0		8.0		43.8	41.4	K	9.0	21	0.1	34.2		7.3		31.7	2.4	L
9.5	3	27.2	55.3			9.2	28	22.9	56.4		9.4	54	14.0	54.5		9.1		9.3	59.8		9.5	49	13.5	8.6	
8.5		28.0	13.0	K		9.5	29	1.9	3.1		9.4		53.7	37.7		8.0		35.8	43.5	K	9.5		21.2	38.9	
9.2		50.9	35.6			8.3		38.7	42.4	K	9.5	55	0.8	47.4		9.3	22	31.2	50.1	B	9.4		25.0	0.3	
9.5	4	0.4	19.4			7.8		57.2	12.1	K	9.5		34.7	30.1		9.5		34.5	50.5		7.7		25.2	54.8	K
9.1		24.3	55.5			9.4	30	31.5	54.5		9.3		56.8	20.5		9.5		38.5	34.3		9.4	50	5.9	9.5	
9.0	5	6.7	38.4			9.5	32	0.8	31.0		9.3		58.1	16.4		9.5		56.1	5.8		9.5		13.9	46.6	
7.5		8.0	53.4	K		9.3		16.7	13.1		9.4		59.9	56.0		8.2	23	14.6	44.6	K	9.5		26.9	49.1	
9.0		23.3	49.7			8.9		25.2	45.2		9.1	56	40.8	11.9		9.3		22.8	55.4		9.5	51	43.0	3.8	
9.5		42.8	56.7			9.5		45.5	6.8		9.3		42.1	19.1		9.5		33.5	56.6		9.4		45.9	37.2	
9.3		50.5	21.9			9.2	33	17.2	29.7		8.1	57	59.6	31.8	K	9.1		36.2	2.0		9.5		56.5	50.1	
9.5	6	17.4	15.2			9.0		27.6	32.2	B	9.5	58	52.8	54.1		7.7		45.8	50.4	K	8.3	52	47.3	29.0	B
8.7		17.7	53.3			9.4	34	6.4	52.3	B	8.8	59	0.5	37.3		8.0	24	24.2	3.5	K	8.0	53	3.8	4.9	K
9.5		26.2	20.1			9.3		19.5	3.1		8.7		2.7	18.4	K	9.4		51.9	16.9	B	8.4		8.3	50.9	K

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
°	10ᵘ—11ᵘ	+24°			11ᵘ	+24°			11ᵘ—12ᵘ	+24°			12ᵘ—13ᵘ	+24°			13ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	53 30.9	47.5		9.3	20 20.0	53.8		9.5	56 40.7	0.1	B	8.8	33 1.9	21.4		9.1	0 52.0	24.3	
9.5	56.3	43.0		9.5	23 49.2	36.5		7.8	45.7	55.7	K	9.5	9.6	14.5		9.3	1 5.8	10.6	K
9.4	57.0	35.0		9.3	57.8	3.8	B	9.5	58 29.1	19.3		9.5	40.0	58.6		9.5	8.3	47.3	
9.5	54 4.1	57.7		8.9	24 6.9	40.3	B	6.8	36.3	0.0	K	9.5	34 0.7	16.6		9.3	27.2	36.2	
8.1	35.2	27.1	L	9.5	25 3.0	34.8		9.4	59 12.3	5.5		9.4	35 0.1	40.3		9.5	49.7	3.5	
9.2	55 9.4	48.5		9.5	6.7	51.9		9.1	22.3	56.3		9.4	14.3	59.4		8.0	2 18.7	41.3	K
9.5	11.9	4.5	B	9.5	26 22.5	25.8		9.5	0 16.6	51.3		9.1	58.4	3.6	K	9.5	31.6	34.1	B
8.6	32.5	9.3	K	9.4	55.9	3.0		8.9	38.7	30.7	K	8.6	36 16.1	48.0	K	9.5	42.3	16.9	
9.5	40.6	9.7	B	8.3	27 3.2	8.1	K	8.8	43.2	41.5	L	8.0	37 54.0	23.3	B	8.9	3 33.1	15.8	K
9.5	56 14.2	42.6		9.2	42.3	8.6		9.5	2 39.6	3.5		8.8	38 39.4	1.4	K	9.5	52.2	58.2	
9.5	58.5	47.7		8.5	28 8.9	29.2	K	9.1	3 1.1	6.9		8.3	39 14.5	6.6	K	9.2	5 21.0	18.1	
9.5	57 16.0	24.0		9.5	30 42.7	54.8		9.5	11.0	59.5		9.0	19.6	29.7		9.2	26.7	27.8	
9.5	58 31.3	22.6		8.3	46.7	13.3	K	8.5	4 4.2	1.3	K	6.5	25.7	56.5	K	9.4	49.6	42.3	
9.4	40.3	41.7	B	7.0	31 8.5	7.8	K	9.5	11.6	20.6	B	9.3	59.6	30.7		9.4	6 48.2	30.9	
9.5	43.0	43.7		8.0	19.7	36.4	R	9.5	18.1	54.1		7.1	40 51.6	53.5	K	9.5	7 7.8	57.0	
9.5	45.5	52.9		9.3	32 23.0	14.4		6.6	23.9	7.8	K	9.1	53.0	51.5	B	9.1	11.1	5.4	K
9.5	59 40.1	50.5		9.0	30.7	54.7		9.5	5 14.1	21.1		9.1	42 47.9	38.0		9.5	9 12.3	7.8	
6.5	55.4	6.7	L	6.9	35.0	30.8	K	9.5	35.8	57.4		9.0	56.9	55.5	B	9.3	23.5	57.6	K
9.4	0 46.5	25.7		8.8	40.7	22.6	K	8.9	6 7.2	3.8		9.3	57.2	4.0		8.6	10 34.0	24.3	R
9.5	1 29.2	31.5		9.1	51.7	24.2	B	9.5	26.1	16.6		9.3	57.5	6.0	B	9.1	11 27.4	6.3	K
9.2	31.3	1.8		9.1	33 39.1	55.7		7.5	7 7.6	28.7	K	9.5	43 0.2	3.6		9.5	12 15.6	42.6	
9.4	35.2	58.4		9.5	34 3.2	12.0		9.5	8 6.6	27.7		9.3	27.2	1.5		9.5	23.2	29.1	
9.3	3 10.0	21.7		7.8	22.7	15.1	K	5.3	9 1.4	46.9	K	9.5	50.5	32.2	B	8.3	53.5	23.6	R
9.5	42.2	19.5		8.5	53.5	43.6	K	9.1	11 19.0	7.0		9.5	44 46.1	15.7		9.5	13 3.7	9.8	
9.2	4 32.3	13.7		9.1	35 48.2	26.1		8.3	38.5	22.5	K	9.1	45 31.2	29.7	B	9.5	8.1	31.9	
9.5	43.5	49.1		7.0	36 15.0	48.5	K	9.0	12 27.9	48.0		9.4	47 45.6	49.7		9.1	23.4	22.5	K
8.9	47.7	18.2		9.3	20.0	52.7	K	9.5	33.1	27.3		9.5	55.7	25.9		9.2	48.6	42.5	
9.2	56.0	13.0		9.1	37 5.8	52.7	K	8.8	13 31.4	54.5		8.8	48 59.8	22.3		9.5	57.4	15.3	
9.5	5 23.6	29.0		9.1	59.2	25.4		9.5	15 47.0	57.0		9.3	49 45.6	59.9	K	9.4	14 2.2	34.2	
9.5	33.1	27.5	B	9.3	38 34.5	5.1		9.5	50.3	12.9		9.5	50 49.1	20.0		8.3	13.1	15.0	K
9.2	42.9	41.6	K	9.5	39 6.5	15.1		8.7	16 17.6	13.6	K	9.5	51 5.8	16.8		9.5	23.2	17.7	
7.8	6 21.5	38.5	K	9.0	10.6	47.1		8.8	46.0	46.2	K	9.5	7.0	30.6		9.5	45.8	0.5	
9.5	7 18.2	58.5		9.0	13.4	12.8	K	9.0	59.6	20.1	K	9.1	28.3	56.2		9.5	15 17.0	8.5	
9.5	33.5	20.1	B	6.8	30.1	31.1	L	9.5	17 29.1	43.7		9.1	32.3	2.8		9.2	33.1	13.3	
9.5	49.0	17.8		9.4	56.3	13.2		6.0	57.3	44.5	K	9.5	52 17.7	26.6		9.4	16 22.5	26.0	B
9.5	8 10.1	53.0		9.5	41 35.4	3.9		9.5	18 4.1	16.0		9.1	46.8	58.4	B	9.5	17 56.4	40.3	
9.5	10 27.9	59.7		9.5	52.6	54.4		8.0	5.6	2.2	L	9.5	59.0	56.4		9.5	59.4	55.1	
9.5	35.2	2.7		9.5	42 47.0	59.1		7.5	22.6	10.0	K	8.9	53 4.0	29.6	K	5.5	18 13.0	36.0	K
9.0	55.8	52.0		9.5	43 45.1	53.9		9.3	58.3	58.1		9.5	6.5	46.6	B	9.3	48.2	27.1	
9.3	11 20.3	16.8		9.5	52.5	30.9		9.2	19 35.2	2.9		9.5	9.4	54.4		9.5	19 3.7	15.3	
9.5	29.9	45.4		9.4	44 12.7	32.9	B	9.4	48.1	45.6		9.5	30.6	52.5		9.1	6.7	38.0	
9.3	58.0	21.6		9.2	45 24.1	26.5	K	9.4	20 3.7	8.0	B	7.5	33.2	26.4	K	9.5	28.6	28.1	
9.5	12 8.1	41.9		9.2	24.2	35.0	K	9.5	21 36.1	54.2		9.5	39.3	7.7	B	8.2	33.5	18.5	K
8.5	54.0	24.4	L	9.5	52.6	28.9		5.7	22 11.7	54.4	K	9.3	53.9	54.4		8.4	20 2.8	14.1	K
9.0	13 7.1	49.4	B	8.5	47 3.6	37.2		9.3	56.4	42.7	B	9.0	54 6.7	7.6		9.4	40.7	20.5	B
9.0	15.7	36.5		9.5	29.9	7.7		7.5	23 49.5	35.6	K	9.3	9.3	23.4		9.4	21 31.0	57.3	
9.5	32.5	11.0		9.0	48 35.1	16.0		7.3	24 37.2	4.8	K	9.2	55 23.8	30.7		8.7	45.0	2.5	K
8.9	14 50.7	26.1		9.5	36.6	53.5		8.9	25 23.4	3.7	B	6.8	28.1	16.8	S	8.6	47.9	20.1	K
9.5	16 20.0	16.6		8.9	49 31.6	24.8	B	9.3	27.7	36.0		8.5	30.6	5.3		9.5	22 50.2	4.6	
9.1	34.0	24.0		9.3	50 17.1	20.7		8.0	31.6	14.3	K	8.3	56 6.3	56.1	K	9.4	52.6	32.5	
9.4	34.5	9.4	B	9.4	22.1	46.2		8.7	43.0	39.1		6.5	10.7	35.9	L	9.3	23 3.2	10.1	
9.5	17 33.9	43.2		9.5	45.2	31.1		9.2	26 30.4	44.6	B	8.6	35.8	25.8	K	8.1	55.9	58.2	K
9.5	18 15.5	50.5		9.5	46.6	7.1		9.4	38.0	45.6		9.5	52.8	59.3		7.8	24 2.0	58.2	K
9.5	50.2	29.6		8.9	48.2	0.5		9.4	27 11.1	15.0		9.4	57 55.0	13.8		9.5	8.8	3.7	
9.4	19 13.4	51.6		9.5	51 18.6	37.9		9.5	49.2	9.4		8.8	58 0.7	36.3	K	9.3	45.5	7.4	
9.3	35.8	56.2		8.5	38.6	43.1	K	9.5	28 34.2	14.5		9.0	5.1	57.2		9.5	26 47.9	30.9	
8.8	44.9	7.5		8.6	52 29.1	46 5	K	8.8	29 30.5	27.0	K	8.6	44.3	37.8	K	9.4	27 22.2	45.0	
9.3	49.8	18.4	B	8.9	53 42.9	38.4	B	8.8	30 55.6	29.7	K	9.5	0 24.7	38.6		9.5	28.7	57.4	
9.4	51.2	21.9		9.4	43.8	39.8		8.8	31 18.7	36.4		8.3	41.1	46.8	B	9.1	41.6	22.5	
8.5	54.7	50.5	L	9.0	55 28.5	58.9	K	8.6	31.1	26.6	K	8.7	42.0	47.5	L	9.5	49.0	57.8	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	13ᵘ	+24°			13ᵘ—14ᵘ	+24°			14ᵘ	+24°			14ᵘ—15ᵘ	+24°			15ᵘ	+24°	
m				m				m				m				m			
9.3	28′ 21.″5	47.′3	B	9.3	48′ 18.″8	4.′2		9.4	14′ 12.″1	46.′0		9.1	42′ 22.″3	55.′3	K	9.4	11′ 22.″1	39.′1	
9.3	51.6	47.1	B	9.4	22.9	2.8		9.5	30.8	3.5		9.1	23.9	51.5		9.4	56.4	38.3	
9.3	56.8	42.4		8.8	38.2	34.9		7.7	38.8	49.6	B	8.5	28.3	9.6	K	9.4	12 12.0	23.9	
7.4	29 16.5	39.8	K	9.5	49 12.4	55.3		8.7	15 4.1	48 6	K	9.5	43 20.3	41.6		9.3	14.5	27.9	B
9.1	47.2	19.0		9.5	24.1	30.9	B	8.2	35.2	18.3	R	9.3	27.8	31.6		9.5	49.2	39.2	
9.5	49.7	35.6		8.8	50 1.0	16.1	K	9.5	37.1	40.4		5.8	46.3	31.3	K	9.5	13 25.3	8.5	
8.7	30 10.5	2.6		9.4	6.0	26.1		9.3	16 8.7	44.9		9.5	46.6	7.9		9.0	40.2	8.9	K
9.1	31 30.6	19.1	R	8.4	34.8	5.4	R	8.0	24.1	46.7	K	9.3	44 38.2	19.6		9.5	46.9	9.0	
9.5	39.2	18.1		9.1	36.9	20.3	B	9.4	56.0	26.7		9.3	45 2.8	23.0		9.5	55.4	18.9	
9.0	59.7	16.0		8.1	44.0	15.5	K	9.0	17 18.1	55.9		6.8	46 2.7	22.7	K	7.0	15 18.1	51.7	K
7.6	32 4.8	59.1	L	8.3	51 32.0	40.3	K	9.1	18 41.8	20.3		9.5	14.9	12.1	B	9.4	29.4	8.4	
7.0	7.7	51.8	L	9.5	37.3	51.7		9.5	19 0.4	25.4		9.5	47 40.4	35.5		9.5	47.9	57.4	
9.4	21.2	13.9		9.5	52 33.3	31.5	B	9.0	0.8	19.0		9.5	59.8	2.2		9.1	16 1.2	55.1	K
9.5	45.7	40.5		9.2	53 9.0	55.0		9.0	13.0	16.5		8.7	48 1.7	10.4	K	9.5	56.7	29.9	
9.2	52.5	4.2	K	9.0	10.2	0.9		9.5	21 15.7	29.3		9.2	25.2	45.4	L	8.9	17 44.3	32.0	
9.5	33 4.1	56.6		9.5	50.1	4.1		9.5	22 5.3	44.0		7.8	26.4	12.0	K	8.7	57.8	32.3	L
9.5	21.2	58.2		9.5	54 28.1	18.3		9.0	23 23.7	46.1	K	9.3	49 30 3	13.9	B	9.5	18 16.5	17.5	
9.4	34 12.2	24.7		9.4	55 21.0	43.0		9.5	43.2	46.1		6.7	36.3	59.3	K	9.5	36.9	28.3	
9.4	15.5	2.7	B	9.4	56 3.3	10.3	B	9.5	25 25.4	17.6	B	9.5	50 4.0	9.9		9.5	19 4.8	29.2	
9.1	20.8	13.9	K	9.1	38.0	51.0		7.8	28 34.2	10.8	L	9.4	39.8	38.8		9.4	10.4	2.2	
9.5	35 6.2	50.4		9.5	50.8	56.0		9.5	29 9.1	9.0		9.5	51 0.0	24.0		9.5	55.6	7.5	
9.0	29.1	56.1	K	9.4	51.2	5.3		9.4	22.8	6.2	B	9.5	32.2	4.6		8.2	20 24.2	5.2	L
9.5	42.6	13.8		9.4	57 59.6	46.9		8.3	25.1	51.2	K	6.8	52 24.7	44.7	K	9.5	43.1	33.0	
7.1	45.0	3.5	R	9.2	58 10.2	59.4	K	7.8	43.8	38.0	K	9.5	53 3.5	41.9		8.4	46.8	23.7	
9.3	36 27.9	2.2		7.8	59 37.7	5.8	K	7.8	59.3	15.4	K	9.4	21.7	1.5		9.5	50.5	22.1	
9.0	51.4	13.2		9.4	53.6	47.5		9.3	31 31.8	41.6	B	9.5	29.3	38.5		8.7	21 42.3	10.0	K
8.8	37 17.3	5.4	B	9.0	0 9.1	40.0	K	9.2	37.9	57.0		9.4	57.1	58.1		8.2	45.1	2.0	B
9.5	43.2	41.6		9.3	45.2	13.5		9.4	56.5	32.8		9.5	54 31.3	29.5		9.1	58.0	9.0	B
8.0	45.6	23.6	S	9.2	1 1.1	26.5	K	9.5	32 5.0	9.1		9.3	37.6	21.5		8.1	22 4.6	11.8	K
9.4	39 9.9	44.8		9.5	41.9	10.2		9.0	7.3	34.1	L	9.0	52.9	25.5	B	8.9	8.0	4.0	K
9.5	21.2	56.9	B	9.1	49.6	21.5		9.5	37.8	41.0		8.7	55 53.4	56.5		9.5	23.6	50.1	
9.4	29.7	30.1	B	9.5	2 16.7	48.7		9.1	44.4	10.2		9.5	56 9.3	21.3		9.5	39.1	57.7	B
9.5	30.6	5.8	B	9.5	19.1	30.1		9.3	33 22.1	58.3		9.5	33.7	20.3		6.9	23 36.2	19.5	L
9.5	39 2	48.4		8.9	3 18.3	32.7	K	9.1	28.4	9.0		8.5	37.8	33.4	K	7.3	51.8	15.1	K
9.1	40.0	52.9	K	9.5	29.6	29.3		9.5	36.7	12.7		9.4	57 34.1	8.5		9.2	24 50.3	56.5	
9.5	40 19.7	56.6		9.5	44.0	39.6		9.5	34 13.2	28.9		9.5	59 5.8	59.1		9.2	25 17.4	24.3	
8.3	41 8.0	51.1	K	9.0	4 13.7	53.7	L	8.9	48.3	20.9		8.7	34.5	39.9	L	9.4	18.5	20.7	
9.5	23.2	8.0		8.9	24.7	23.7		9.3	49.2	41.5		9.1	0 33.7	21.0		9.2	19.5	32.5	B
9.1	29.6	19.8		9.4	59.2	8.9		9.4	52.9	55.4	B	9.5	44.3	45.7		9.3	29.9	8.5	
9.3	32.1	48.4	K	8.5	6 4.1	30.3	K	8.7	35 12.7	49.7	L	9.3	1 12.7	41.0	B	9.0	46.8	35.3	L
7.8	37.8	9.5	K	9.4	23.2	8.7		9.5	36 16.8	40.9		9.4	44.8	27.9		8.9	53.2	0.6	
9.5	50.2	54.3		9.4	29.3	38.7		9.5	37 21.3	29.9		9.1	2 19.1	46.1		8.5	26 19.4	21.6	K
9.4	51.5	40.3	B	9.5	29.5	33.9		9.4	29.4	0.3		9.0	31.2	46.0	K	9.2	21.5	14.7	
9.1	53.2	46.0	K	9.0	29.7	1.4		9.3	31.2	23.4		9.1	46.3	33.7		8.0	58.7	43.6	K
9.5	42 29.9	59.3		9.0	38.7	24.5	K	9.5	38 1.7	44.3		9.5	4 40.8	59.6		9.4	27 30.8	37.8	
9.5	43 30.1	5.3		9.4	47.4	34.9	B	8.8	29 1	8.1	K	9.5	42.1	14.6		8.9	45.3	46.3	L
9.4	41.7	17.0		6.5	8 25.1	22.1	K	9.4	45.8	20.3		9.5	59.9	33.0		8.4	55.9	7.0	L
9.1	46.7	21.8		9.2	49.5	44.8	K	9.3	51.7	34.5	B	9.5	5 3.1	7.5	B	9.0	59.1	27.5	
8.3	44 11.1	21.8	B	8.7	9 36.7	2.3		9.5	39 9.3	56.3		8.7	17.8	47.5	K	9.4	29 5.1	53.2	B
8.5	14.2	29.1		9.2	55.6	7.5		8.8	24.7	20.3	L	9.3	7 18.5	23.5		9.4	28.6	20.3	
9.5	45 1.2	31.5		8.5	57.4	9.0	B	9.0	40 0.7	13.2	K	9.1	8 7.1	57.0	K	9.4	41.2	20.3	B
8.5	24.0	2.4	K	8.9	10 21.4	52.7	K	9.5	5.5	6.3		9.5	14.2	35.4		8.9	44.1	41.5	
9.5	31.1	49.1		9.3	25.5	17.7		9.4	29.3	34.4		9.4	9 24.2	5.3		9.5	30 6.0	10.8	
7.5	51.6	17.7	L	8.9	11 20.3	17.0		9.3	38.5	26.1		9.3	24.6	54.2		8.3	26.4	20.4	K
8.9	46 0.5	9.7	K	9.0	44.6	40.6	K	8.3	50.7	23.4	K	9.5	57.4	52.5		9.5	34.9	50.2	
8.1	3.5	3.9	K	9.5	12 22.5	1.4		7.5	41 11.8	42.2	B	9.4	10 2.1	9.3		9.5	35.4	59.7	
9.5	12.4	56.1		9.4	26.6	45.9		9.3	30.7	46.4	B	9.5	8.1	11.7		9.3	31 7.1	14.9	
7.7	39.8	53.2	K	9.2	44.5	50.1		8.3	37.0	6.2	K	8.0	9.0	4.5	K	9.5	12.3	52.8	
9.0	42.2	52.2	K	8.0	13 3.9	10.8	B	6.1	58.6	57.9	K	9.3	23.5	54.0		9.2	24.8	47.9	K
8.9	47 32.1	12.9		9.5	16.6	14.2		9.3	42 5.7	34.2		9.5	11 5.9	3.4		9.5	45.8	41.8	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	15ᵘ		+24°		15ᵘ—16ᵘ		+24°		16ᵘ		+24°		16ᵘ—17ᵘ		+24°		17ᵘ		+24°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
7.4	32	3.4	59.9	B	9.5	56	50.9	51.9		8.5	26	19.8	12.2		9.5	48	40.0	22.6		7.2	5	17.4	27.0	L
9.5		15.5	28.6		9.4	57	27.1	53.6	B	9.0		21.7	57.3	K	8.9		40.1	6.4		9.2		37.8	1.7	K
9.4		20.0	30.4		9.5		28.5	45.6		9.2		45.3	33.5		8.2	49	1.0	28.7	K	9.2		44.9	53.4	K
9.5	33	4.8	6.6		8.6		30.3	36.3		9.4	27	6.8	51.0		9.5		20.8	5.8	B	9.3		57.3	33.3	B
9.5		28.5	44.5		8.5		43.0	39.4		9.5	28	20.4	2.0		9.5		31.8	5.5	B	8.9	6	20.2	53.8	K
9.5		33.1	5.1		8.9		46.0	46.6		9.5		27.3	9.4		9.4		37.4	9.3		9.4		39.3	1.2	
9.5		41.4	50.8		9.3	58	26.1	44.5		8.8		29.8	56.6	B	9.4		46.3	4.3	B	9.3		40.3	49.2	
9.3		53.3	11.5		9.4	59	50.4	51.9		9.3		49 0	53.7	K	8.3	50	0.9	44.3	K	9.0		41.6	2.6	K
9.5	34	51.1	30.8		9.3	0	36.3	39.9	B	9.3	29	19.2	36.2	B	8.8		11.7	2.3		9.5		52.5	25.7	
9.5		55.0	56.1		9.4		41.1	44.6		9.4		25.0	40.1	B	9.5		24.5	40.5		9.1	7	43.9	25.7	
9.3	35	33.3	1.5	B	9.3		44.1	46.1		8.0		35.9	37.4	L	8.7		25.2	30.8	K	9.2		58.9	3.8	
9.3	36	19.0	32.8		8.3		55.5	49.4	K	9.1		54.5	33.2		9.4		35.5	35.3	B	9.5		59.5	30.2	
9.5		57.5	18.6		9.3	1	38.5	29.0		9.5	30	59.4	44.9		9.4		59.9	18.2		9.4	8	19.5	2.0	
7.3	37	56.0	55.4	K	9.5	3	9.3	11.2	B	9.4	31	15.6	6.1		8.5	51	2.0	25.7	K	8.0		47.0	14.7	K
9.1	38	32.2	5.8		9.3		29.5	19.7		9.1		33.5	33.2		6.5		41.3	36.6	L	9.4	9	6.1	41.4	
9.4		42.2	0.9		9.3		48.4	47.6		9.2	32	16.1	7.8	K	9.4	52	29.0	8.4	B	9.4		26.8	54.0	
8.6		52.0	48.8	K	8.5	5	15.0	11.2		8.4		57.0	40.1	K	8.4		43.8	1.6	K	9.3	10	14.8	22.0	
8.4	39	21.1	6.9	K	9.5		22.7	23.5	B	7.4	33	4.6	59.4	R	9.5	53	3.5	38.7		9.4		34.9	35.1	
8.8		24.0	32.5		9.5		26.9	59.8		9.0		10.5	42.8	K	8.7		20.0	41.8	K	9.0	11	16.6	47.4	K
9.2		26.5	55.4		9.5	6	54.2	37.7		9.5		12.1	59.2	B	9.5		23.1	52.9		9.5		46.1	9.4	
9.2	40	2.2	56.5	K	9.3	7	33.8	47.9		9.5		30.0	1.0		7.7		39.9	26.0	K	9.4		54.6	3.3	
9.3	42	11.6	45.0	B	9.4	8	5.1	31.8		9.5	34	15.2	4.4		9.5	54	7.9	35.3		9.2	12	17.8	47.8	
9.4		25.2	44.9	B	9.2		15.1	30.6	B	9.4		27.2	49.8		9.5		10.5	48.7		9.5	13	24.8	23.6	
9.5		54.0	26.9		8.9	9	1.7	53.8	K	9.0	35	25.4	19.5		8.0		40.4	38.1	K	9.0		50.5	57.7	K
9.5	43	0.5	58.1		8.8		40.9	25.6		9.4	36	16.0	2.4		8.5	55	50.0	34.6	L	9.5		56.1	47.8	
7.3		25.6	7.8	K	9.4		47.1	5.4	B	9.5		49.6	36.7		8.5		54.6	2.0	K	9.5	14	25.4	4.8	
9.5		46.5	45.9		8.9		53.8	38.0		9.1	37	47.0	25.3		9.4	56	24.0	17.9	B	6.0		56.0	37.7	K
9.3	45	3.0	49.8		9.5	11	3.7	19.1		8.1	38	24.7	4.3	L	9.3		38.0	3.0	K	9.0	15	7.8	40.6	K
9.3		15.0	28.0		9.5	12	11.4	7.5		9.2		41.1	6.7		9.5		49.9	36.0		9.3		10.8	55.1	
9.4		53.5	23.9		8.7		34.2	9.8	K	8.1	39	17.9	50.6	K	9.5	57	24.1	6.8		9.4		38.7	59.0	
9.3	46	50.5	23.3		9.2		46.0	49.1		9.4		52.7	12.6		9.5		43.3	37.4		9.1	16	33.8	12.7	K
9.4		59.4	45.5	B	9.2	13	42.5	23.5	R	9.1	40	0.8	23.0	B	9.0		51.5	17.5		9.4		50.1	36.1	
8.9	47	39.5	22.5		9.1		44.0	0.8	K	8.8		14.7	53.5	K	9.5	58	18.7	17.8		9.3	17	6.2	30.3	
9.5	48	3.1	22.9		9.5	14	1.5	2.9		9.3		24.5	38.4		9.3		49.4	6.1		9.5		12.1	10.9	
9.5		9.5	35.3		9.1		10.6	56.8		9.5		36.5	9.9		8.7		57.7	19.9	K	9.2		30.7	33.5	B
9.3		39.2	27.0		9.5	15	53.3	0.1		9.3	41	5.4	23.0		9.2	59	0.0	27.1		9.4		31.9	8.1	B
9.5	49	25.5	11.8		9.3	17	3.5	1.7	B	9.5		10.2	22.6		9.5		4.0	29.9		9.3		40.7	39.5	K
8.8		32.4	35.6		9.0		16.9	17.1	K	8.6	42	31.9	23.2	K	9.5		7.5	40.5		9.5	18	51.3	48.4	
9.5		37.5	41.5		9.2		18.5	59.2	K	9.5		51.0	44.2		9.5		44.4	27.1		9.5	19	10.1	37.8	
9.5		45.0	2.9		9.3		34.0	59.0	B	8.9		51.7	31.2	K	9.5	0	12.1	2.5		9.0		54.4	22.0	K
8.5	50	16.5	45.9	K	9.3	18	2.5	56.0		9.5	44	30.8	50.0		8.0		33.2	9.5	K	8.5	20	14.4	15.3	K
9.1		24.6	33.2		9.1		11.6	27.0	R	9.5		31.4	37.7		9.4	1	13.9	28.1		8.5		17.1	13.6	K
9.4		33.5	38.3		7.7	19	1.2	23.9	R	9.5		46.1	12.0		9.4		38.7	57.8		9.1		17.1	23.8	B
9.2		50.3	9.7		9.1		4.5	20.5	R	9.5	45	3.7	7.1		8.0		46.0	47.0	K	8.5		21.3	26.1	K
9.0		55.6	9.9		9.5		24.7	52.8		9.0		15.0	21.5		9.5	2	18.9	12.7		9.1		55.3	20.0	
9.5	51	24.1	20.5		8.4		34.0	53.4	B	8.3		15.9	41.7	K	9.5		28.4	55.2		9.5	21	26.8	7.5	
7.8		41.7	48.8	K	9.3	20	35.2	25.6		9.4		28.0	33.7	B	6.5		34.4	40.8	K	9.4		47.0	6.9	
9.1		56.0	47.7		8.8		49.8	33.2		9.1		35.2	54.7	K	9.5	3	9.0	37.0		8.7	22	17.3	11.2	K
9.5	52	32.6	16.8		9.5	21	32.2	29.1		5.3		44.9	54.8	K	9.5		11.2	42.5		9.5		21.6	7.4	
9.4		47.2	12.7	B	8.7		53.3	10.0		9.5	46	38.5	9.8		9.5		20.5	42.2		9.5		50.8	42.7	
9.5	53	16.3	20.1		9.3	22	6.5	53.7		9.4		42.9	32.3	B	8.9		24.5	34.3	K	9.2	23	29.1	3.2	K
8.8		32.7	0.4	B	9.5		8.2	30.8		9.5		43.7	47.7		9.5		30.7	3.0		8.8		38.7	47.8	K
9.4		49.1	54.2	B	8.5		54.5	15.2	K	9.0		43.9	44.6	K	8.5	4	9.5	13.0	K	8.9		43.8	57.0	
7.5		51.4	41.8	K	9.4	23	12.0	6.8		9.5	47	9.3	55.7		9.4		17.0	28.7	B	9.5		55.9	59.8	
9.5	54	2.0	53.8	B	9.5		53.4	2.7		9.5		19.6	40.2		9.0		21.5	17.8	K	9.5		57.2	56.8	
9.3		39.6	4.4		8.5	24	6.2	11.5	K	9.3		24.5	44.5	B	9.1		27.0	24.7	B	9.5	24	26.3	59.5	
8.7		52.7	51.9	K	9.3		35.0	4.4	B	8.6		27.0	10.5		8.2		40.5	41.8	K	8.0		40.4	8.9	K
9.4		53.1	54.7		9.5		37.9	5.6		9.4		51.5	45.0		9.5		42.4	47.3		9.5		58.0	35.4	
9.4	55	39.3	41.3	B	8.1		53.8	18.0	B	9.3	48	27.3	43.7		9.2		50.7	56.8		8.8	25	9.0	1.1	K
9.5		59.7	16.0		9.0	25	55.4	57.9		9.1		36.9	45.7	K	6.2	5	2.5	26.0	L	9.1		9.3	55.4	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	18h	+24°			18h	+24°			18h—19h	+24°			19h	+24°			19h	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	36 20.2	32.3		9.3	46 40.1	32.7		9.2	58 28.2	50.8	K	9.3	7 19.9	10.1		9.1	19 50.0	21.2	K
9.3	52.0	8.8		9.2	47.3	28.6		9.3	33.2	39.0		8.5	37.9	47.4	L	8.0	56.8	46.2	K
9.5	37 5.3	37.9		9.1	54.2	24.8		9.3	46.5	14.2	B	8.3	40.1	20.7	K	9.5	20 12.4	37.3	
8.6	10.1	4.8		9.4	58.1	30.4	B	8.5	52.6	42.0		8.8	56.9	25.2		9.5	35.5	33.5	
9.3	17.0	24.3		9.5	47 0.8	28.6		9.4	54.9	34.5		9.4	8 1.7	19.0		9.4	48.5	14.3	
9.3	23.2	57.6		9.2	8.7	22.4		9.3	55.7	27.6		9.5	13.4	31.6		9.5	48.5	54.5	
9.4	30.4	14.4		9.2	9.4	8.5		9.5	59 0.3	50.5		7.4	19.7	46.2	L	9.5	21 7.2	53.5	B
9.0	40.1	33.2	B	8.3	25.6	5.9	K	9.5	15.8	45.9		9.4	34.5	11.4		9.4	8.7	38.0	
8.8	38 1.2	27.6		8.5	31.4	38.0	K	9.4	30.2	44.7		8.7	48.6	17.3		9.5	9.0	56.0	
9.4	4.0	53.3		9.5	48 9.0	19.3		9.3	36.0	9.9		9.5	9 0.0	13.7		8.2	30.5	15.3	
9.5	7.6	1.8		9.4	19.8	18.2		9.2	37.2	38.0		9.4	2.9	18.7		9.4	30.9	54.4	
9.5	12.2	0.4		9.5	20.5	35.5		9.3	55.8	34.6	B	9.5	16.3	38.0		9.4	31.9	6.5	
9.0	15.7	14.3		9.5	31.3	26.2		9.5	59.1	38.1		9.1	17.1	46.6		9.4	33.4	9.3	
9.3	18.9	52.4		9.2	39.6	17.5		9.5	59.2	48.6		9.4	26.5	3.2	B	9.5	51.0	3.4	
8.9	37.2	33.5		9.3	58.4	48.3		9.5	0 6.1	8.3		9.5	37.0	56.8		9.2	22 1.5	24.1	
9.5	49.8	22.4		9.0	49 3.9	46.0	B	8.4	22.0	25.9	K	8.5	48.5	31.9		9.5	2.0	16.4	
9.5	52.0	26.5		9.2	4.8	41.7		9.5	23.2	32.6		9.4	10 0.6	36.8		9.4	21.5	29.0	
8.8	53.1	44.2		9.5	14.5	10.1		9.5	23.2	33.9		8.0	8.3	31.8	L	7.5	24.3	41.6	L
9.0	58.2	52.2		8.5	22.1	31.6	K	9.5	31.9	21.2		8.3	36.6	1.8	K	4.2	39.6	22.2	K
9.5	39 24.0	0.4		9.2	42.2	31.9		5.4	36.5	1.9	K	9.5	42.3	4.6		9.3	52.2	21.3	B
9.5	28.9	3.4		9.5	55.6	37.4		9.4	45.8	29.4		8.8	50.2	29.3		6.4	54.2	28.4	B
9.5	33.7	54.8		9.5	58.0	36.6		9.3	1 4.5	40.2		9.3	53.1	4.1		9.5	23 1.0	20.3	
9.0	39.2	40.0	R	9.5	58.8	54.5		8.6	17.1	18.0	L	9.5	55.8	43.9		9.3	8.0	42.1	
9.5	45.5	8.9		9.4	58.9	38.1	B	9.0	34.4	27.6	K	9.0	11 5.1	4.8	K	9.1	41.0	55.8	K
9.2	48.1	52.8		9.1	50 17.0	44.3		9.4	42.5	1.9		9.3	24.6	5.4		8.0	24 1.8	45.4	L
8.5	56.2	40.9	B	8.5	28.6	16.2	B	9.4	52.7	14.6		7.8	31.2	58.8	B	9.1	10.6	3.6	
8.2	40 24.8	17.7	K	9.3	35.5	14.9		9.5	54.6	38.7		9.2	55.4	9.4	R	8.4	21.3	7.0	L
9.5	38.2	22.6		9.4	44.0	32.5		9.4	56.2	49.5		7.4	12 8.9	9.2	K	8.1	35.9	48.8	L
9.5	39.1	5.7		9.4	47.2	9.5		9.5	2 0.5	44.3		9.5	40.2	24.1		9.2	41.7	37.2	K
9.4	41.0	31.0		8.8	52.0	16.6	B	6.5	2.2	29.7	K	9.1	55.7	7.2		9.5	25 0.5	32.2	
8.9	50.4	14.2	K	9.2	51 7.3	44.6		9.2	2.8	9.5	B	9.4	13 20.6	24.6		9.5	23.0	0.5	
9.3	53.2	55.2		8.6	33.0	34.5	K	9.2	5.4	52.7		9.3	29.8	10.1		9.5	58.7	34.3	
9.1	41 0.9	14.8		9.5	41.4	14.5		9.5	21.4	6.3		9.5	55.9	49.6		9.2	26 11.3	0.8	
9.0	1.7	15.6	B	9.2	50.3	55.3		8.8	33.1	6.3	K	9.1	57.8	42.7		9.1	32.2	26.5	
9.0	2.8	41.7	B	7.5	52 13.2	30.6	K	7.9	3 9.9	35.4		9.5	59.0	46.9		9.3	50.6	39.4	
8.9	4.1	53.7		8.6	38.1	3.2	R	9.3	21.1	8.8		9.3	14 4.9	5.4		9.5	55.4	7.8	
8.3	11.2	13.7	K	9.3	53 17.3	50.4		9.2	38.3	3.5		9.0	17.8	51.6		9.1	27 30.4	57.4	
8.2	23.3	29.3	L	8.8	17.8	58.1	K	9.5	50.3	41.2		9.5	31.4	12.3		9.0	35.7	31.0	R
9.5	47.7	21.8		9.0	27.8	34.3	B	8.7	53.9	57.0	K	9.1	39.1	8.0		9.4	57.4	13.5	
8.5	47.9	12.0	K	9.3	27.8	33.5		9.1	59.6	26.1		9.5	44.7	30.6		8.8	28 0.0	16.6	B
9.4	55.5	38.3	B	9.2	28.3	28.6		9.5	4 6.8	28.3		9.4	47.9	51.3		9.4	15.1	6.6	
9.5	57.6	12.4		8.9	54 7.2	58.5	K	9.5	11.5	8.5		9.3	15 48.1	6.3		9.5	16.7	7.0	
9.4	42 54.1	57.5		8.5	13.0	59.0	K	9.5	37.0	12.2		9.5	59.0	55.8		9.5	39.3	7.1	
9.4	43 6.2	56.5		9.5	37.9	12.1		9.1	38.2	22.2	B	9.4	16 5.2	8.4		9.3	40.5	16.8	
6.0	17.2	52.9	K	9.1	55 9.2	34.7		9.5	45.1	45.0		9.3	19.5	18.1	K	8.6	47.9	50.1	L
9.5	19.2	50.9		9.5	23.5	57.6		8.8	46.8	33.8		9.4	37.1	5.4		8.9	53.0	15.8	K
9.0	38.8	2.7		9.0	33.4	0.4		8.8	5 5.6	24.9	K	8.3	42.8	39.2		9.3	56.4	11.8	
9.5	44.0	43.4		6.7	36.2	49.4	R	8.5	18.0	55.3	K	9.3	17 13.4	48.3		8.7	58.8	42.7	L
9.1	44 16.4	56.7	B	9.5	43.2	18.8		9.5	30.3	0.9		9.3	22.5	14.2		9.0	29 6.5	21.3	K
9.5	21.5	28.6		9.4	56 7.5	42.0		9.5	44.5	57.7	B	9.1	55.5	16.4		9.5	9.8	42.7	
9.4	27.7	52.0		9.5	41.5	28.1	B	9.2	49.1	19.9	B	9.5	58.7	19.4		9.2	15.4	54.7	
8.4	51.2	33.0	R	9.5	57 15.9	1.7		9.1	50.8	28.6		9.5	18 2.4	24.1		9.5	25.5	17.2	
9.5	45 45.4	22.6		9.2	18.5	43.5	R	9.2	6 24.5	20.9	R	9.3	10.4	49.6		9.0	26.0	52.8	R
9.3	50.0	23.1	B	9.1	24.3	40.0		9.1	27.9	34.1	B	9.3	10.5	43.4		9.1	29.0	47.3	
8.7	46 8.1	20.5		9.0	24.8	58.6		9.3	28.2	7.0		9.2	18.0	57.7		9.0	31.1	50.0	
9.0	22.2	9.9	K	9.4	26.7	52.2		9.5	33.8	28.9		9.5	35.8	50.8		9.4	38.7	55.3	
9.3	25.7	29.8		9.0	28.2	32.1	R	8.0	40.4	19.7	R	6.1	19 25.8	39.0	L	8.1	44.5	51.4	B
8.4	30.4	54.3		9.3	34.5	27.9		9.3	59.1	0.9		9.5	33.4	6.4		8.1	30 0.4	24.7	K
9.5	37.2	19.5		8.7	37.6	59.9	B	9.5	7 10.0	21.6		9.5	43.5	26.2		8.9	7.6	58.5	
9.2	39.0	31.6		9.5	58 2.5	40.5		9.4	11.2	10.8	B	8.6	49.7	53.9	L	9.4	15.8	5.9	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ᵘ		+24°		19ᵘ		+24°		19ᵘ		+24°		19ᵘ—20ᵘ		+24°		20ᵘ		+24°	
m		′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.7	30	20.8	44.9	K	9.4	38	49.6	28.8	9.5	48	14.6	24.6	9.5	56	21.6	48.7	9.5	6	43.6	31.1	
9.0		24.9	50.8		9.5	39	1.5	19.2	9.1		31.4	12.0	9.5		25.5	39.3	9.4		53.9	32.5	B
8.5		26.0	40.7	K	9.4		21.5	0.8	9.1		36.4	10.0	9.5		33.7	10.2	9.1	7	3.2	31.2	
9.1		27.2	1.7		9.5		27.1	10.8	7.7		43.7	30.5	L 9.5		51.1	37.8	9.4		4.3	21.2	
9.3		27.4	41.5		9.5		29.9	51.3	8.0		49.0	57.0	9.5		58.9	31.1	8.4		8.2	48.1	
9.1		27.9	25.8	B	9.4		36.0	46.4	8.8		49.9	50.4	9.5	57	9.4	31.1	9.5		19.8	56.1	
8.5		31.0	4.7		9.0		38.1	19.4	K 9.4		59.7	49.2	B 8.6		22.8	31.1	L 8.1		22.9	5.9	K
9.2		40.8	40.0		9.4		41.5	0.6	9.5	49	17.6	28.9	9.5		46.2	57.8	9.5		39.9	55.3	
8.5		42.8	41.7	K	9.3		44.8	43.1	9.5		19.4	26.2	9.5		49.6	24.7	9.2	8	3.6	1.7	
9.0		43.0	58.5		9.3		54.9	29.4	B 9.5		22.8	43.9	9.4	58	4.7	56.4	9.4		4.5	44.3	B
9.5		58.6	22.4		9.3	40	7.8	23.6	9.5		30.6	21.7	8.2		21.9	31.1	L 9.5		4.7	45.2	
9.4	31	0.0	12.1		8.3		9.9	48.8	L 9.0		46.7	37.2	9.1		41.3	8.7	K 9.5		5.4	6.5	
8.9		10.7	7.7		9.3		16.5	16.7	9.4		47.8	14.7	9.5	59	1.5	28.4	8.0		19.6	24.2	K
8.2		43.8	41.4	K	8.0		19.6	26.3	K 9.0		53.4	33.8	9.2		2.2	23.5	9.5		33.1	24.7	
7.9		48.6	23.6	L	9.4		23.6	9.3	9.5	50	12.6	11.3	9.5		19.0	57.3	9.4		34.8	8.1	
9.4		57.6	15.0		9.4		23.8	41.4	9.0		27.0	57.0	K 9.5		27.9	29.1	9.2		35.7	35.8	
9.5	32	5.1	57.7		6.5		33.9	46.8	L 8.8		36.6	25.4	8.2		46.1	2.8	R 9.2		37.3	54.9	
9.2		20.5	15.0		9.5		50.8	1.5	9.5		39.3	2.4	9.5		56.6	18.5	9.0		41.7	33.9	K
9.4		21.8	44.2		9.5		50.9	15.5	9.5		48.6	29.1	9.5		58.9	14.0	B 9.5		42.1	56.9	
9.3		24.9	54.3	K	9.5		51.9	12.0	B 9.4		56.9	53.8	9.2	0	29.6	32.7	8.8		42.4	52.9	B
9.5		32.2	34.5		9.0		57.7	29.7	K 9.5	51	10.4	7.1	9.5		32.9	3.9	9.5		43.1	56.4	
9.5		32.5	25.6		9.0	41	13.7	37.6	9.5		21.3	24.1	8.4		32.9	1.1	K 9.4		53.8	34.6	B
9.5		40.0	57.7		9.5		13.9	11.8	8 9		37.8	44.6	9.5		41.8	33.9	9.0		54.0	40.5	K
9.1		56.3	1.2		9.5		14.0	16.2	9.5		42.5	23.4	9.5		47.2	23.5	9.2	9	0.0	25.4	
8.7		58.0	56.3	K	9.5		37.4	13.3	8.2		43.9	6.9	K 9.3		49.0	51.2	9.4		0.4	1.7	
9.5	33	0.6	6.3		9.5		56.6	25.6	9.3		49.0	57.0	9.5		58.5	48.3	9.5		16.2	9.1	
9.0		19.9	53.8	K	9.4	42	0.0	21.6	9.0		51.2	28.5	B 9.3	1	27.3	56.2	9.4		37.9	32.7	
8.9		22.8	43.9		9.5		5.8	41.4	9.2		52.9	27.2	8.7		29.1	11.9	9.5		57.9	50.1	
9.2		38.4	14.9	B	7.3		17.3	38.9	K 9.3		53.6	46.4	9.5	2	15.1	12.9	9.5		58.7	52.4	
9.5		44.0	28.7		9.4		18.5	7.3	9.4	52	13.3	4.6	9.4		15.4	16.4	8.7	10	6.7	10.2	K
9.3		44.4	11.5		9.3		24.7	36.0	K 9.0		37.3	4.4	9.5		17.5	0.2	B 9.5		7.9	53.4	
7.3		45.4	12.2	L	7.5		28.7	36.0	K 9.4		40.6	26.9	9.4		18.4	17.6	9.2		13.4	53.9	
9.5		53.8	39.2		9.3		40.3	26.9	8.8		44.7	32.8	9.5		18.4	25.8	9.5		18.5	27.9	
9.0	34	1.8	45.9	K	9.3		46.2	0.3	B 9.5		52.4	53.5	9.5		20.0	32.0	9.5		30.2	46.9	
9.2		3.5	55.5		9.5		47.6	29.9	9.4	53	0.8	21.2	B 7.9		30.3	20.4	K 6.0		35.6	13.1	K
9.2		12.0	26.7	B	8.8		53.5	20.8	9.5		7.3	33.5	8.0		31.1	13.4	K 9.5		36.5	26.2	
9.5		35.6	3.5		9.5	43	10.4	10.8	9.0		22.4	10.5	8.6		46 7	54.6	9.5		55.3	2.7	
8.2		40.5	14.1	K	9.0		31.4	9.1	8.2		24.5	19.6	K 8.6		48.3	20.9	K 9.4		58.8	42.8	
9.5		54.4	11.8		9.4		57.4	50.2	9.4		24.7	34.2	9.5		48.9	46.1	9.5	11	6.7	35.4	
9.4		56.1	4.2		9.4		58.0	0.4	9.0		30.9	48.7	K 9.5		57.2	11.1	9.5		9.6	23.7	
9.2	35	12.2	25.5	B	9.5	44	3.5	49.1	9.4		36.6	28.2	9.4	3	2.5	1.7	9.5		13.3	19.6	
9.1		26.1	8.2	K	9.2		5.7	34.0	7.9		54.9	47.3	K 9.3		12.6	37.6	9.5		20.3	30.8	
9.5		46.3	0.4		9.0		11.5	55.7	K 8.7	54	29.9	49.8	L 9.2		13.1	57.5	9.5		47.2	9.2	
8.7		58.6	22.6		9.5		20.4	34.0	8.8		31.2	7.3	B 9.0		13.3	32.9	9.4		49.8	0.7	
9.2	36	5.7	34.0		9.4		37.0	56.5	8.6		44.3	45.4	K 9.5		32.5	26.7	8.6	12	1.3	3.1	K
9.5		14.3	24.9		9.3		45.8	56.2	9.5		46.0	1.6	9.0	4	3.6	11.8	9.1		59.1	13.6	
9.0		26.6	28.9		7.3		48.0	15.7	K 9.5		48.5	21.7	8.6		7.2	56.9	K 9.5	13	2.9	53.6	
9.5		48.7	36.8		9.4		51.9	53.8	9.4	55	6.5	1.7	B 9.0		15.6	13.6	9.5		15.7	10.4	
7.1		59.5	16.3	L	9.3	45	2.5	19.5	8.7		7.5	17.5	7.4		18.6	37.6	K 9.5		36.8	46.0	
9.3	37	16.8	38.8		9.2		24.4	12.8	9.5		9.5	36.3	9.5		41.4	29.4	9.2		43.8	6.9	K
9.5		29.6	29.2		9.1		25.5	58.9	9.5		9.8	5.9	9.4	5	20.5	38.8	9.2		59.9	5.9	K
9.5		37.0	56.0		9.4		45.0	58.2	9.5		18.1	32.5	B 9.5		32.4	14.3	9.4	14	3.7	33.9	
9.5		49.9	50.5		9.5		50.3	8.7	9.4		21.1	36.5	9.4		34.0	10.2	B 9.5		13.5	39.8	
9.5		50.3	5.5		5.7		55.7	37.0	K 9.2		28.4	9.5	9.5		37.7	14.3	9.3		14.3	32.4	
9.5		56.8	11.8		9.3	46	10.5	13.8	6.2		36.3	24.0	K 9.0		55.8	19.2	9.4		30.6	24.5	
8.6	38	2.8	40.2		9.4		17.6	12.1	B 9.5		46.5	17.4	9.5	6	4.5	14.5	9.3		31.7	10.9	
9.5		25.0	55.0		9.2		30.7	35.5	5.5		52.5	31.8	K 9.5		4.5	26.4	9.5		57.9	40.0	B
9.3		31.4	11.8		9.4		58.5	3.9	8.8		56.9	1.6	K 9.5		17.7	22.0	9.3		58.4	5.9	
9.5		45.4	48.3		8.9	47	7.2	0.9	8.3	56	1.3	45.2	L 9.0		33.5	4.0	9.5	15	13.8	56.1	
9.5		47.8	7.5		9.5		12.7	29.0	9.5		19.3	8.4	9.5		41.4	43.0	8.8		35.9	18.5	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵘ	+24°			20ᵘ	+24°			20ᵘ	+24°			20ᵘ—21ᵘ	+24°			21ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	15 44.3	19.1		9.5	27 14.7	9.6		8.5	36 44.6	36.3	K	9.5	50 18.8	48.2		9.4	4 22.4	57.1	
9.3	55.7	8.9	R	9.3	22.8	8.1		9.0	45.1	1.3		8.8	50.4	6.7		9.5	34.6	45.7	
9.2	57.7	47.9		9.5	37.2	27.9		9.5	37 6.7	54.0		9.5	50.7	35.6		9.5	37.9	28.8	
9.5	16 3.9	5.2		9.1	39.5	57.7		9.5	40.3	20.4		9.4	51.2	46.2		9.5	37.9	30.5	
9.5	24.3	6.7		8.7	56.8	20.0	K	9.5	43.6	37.7		9.2	51 21.2	48.2		9.3	51.5	16.6	
9.4	27.2	57.5		9.2	56.8	32.9		9.5	44.3	32.4		9.3	32.9	4.9		9.5	5 15.5	28.0	
9.5	27.9	26.7		9.5	59.6	36.6		9.1	38 9.2	9.7		9.5	48.6	20.5	B	8.7	31.2	48.3	
9.4	32.7	10.6		9.0	28 11.0	3.0		8.7	23.0	26.7		9.4	53.0	3.3		9.5	45.4	42.8	
9.5	41.2	46.0		9.4	13.8	8.7		5.7	36.3	45.4	L	9.2	52 8.4	17.1		9.4	6 8.9	6.2	
9.3	17 16.4	54.4		9.5	35.7	43.9		9.3	50.7	58.3		9.5	12.8	7.2		9.4	9.6	50.2	
9.5	20.6	50.2		9.5	36.3	21.0		9.5	57.2	16.3		9.0	45.4	51.7	B	8.0	28.6	36.1	K
9.3	41.7	58.0		9.5	40.0	2.5		8.5	58.5	39.5	K	9.5	46.0	3.7		9.5	30.4	51.6	B
9.5	45.2	37.3		9.5	42.0	59.8		8.6	59.2	48.1		9.3	47.3	51.4	B	9.1	7 6.7	21.3	
9.5	18 6.4	29.7		9.5	44.4	42.7		9.5	39 18.9	16.6		9.1	52.0	41.0		9.4	16.7	34.1	
9.5	13.3	44.2		9.5	52.2	47.7		9.0	19.7	9.9		9.0	53 2.2	22.0		9.5	34.3	20.0	
8.0	34.6	42.6	B	9.0	29 0.7	13.4		9.4	46.1	14.9	B	9.4	33.5	3.7		9.3	52.7	46.4	
9.4	49.7	57.2		9.0	9.4	28.3	B	9.5	48.8	8.6		9.4	53.8	7.0		6.7	9 35.1	50.4	K
9.5	50.1	24.5		9.2	10.0	2.0		9.5	58.9	42.8		9.5	54 19.6	37.9		9.3	47.2	41.1	
9.5	59.5	39.0		9.4	12.7	39.5		9.5	40 10.6	37.3		8.5	31.9	18.4	K	9.3	55.6	38.3	B
9.2	19 7.5	14.3		9.5	23.5	39.3		9.5	26.5	19.5		9.5	59.4	0.7		9.5	10 33.4	7.7	
9.5	15.8	2.4		9.2	26.8	6.7		8.4	47.0	53.2	K	9.2	59.4	0.3	B	9.0	38.5	58.3	
8.8	18.8	20.2		9.5	29.5	53.1		9.3	58.1	46.6		9.5	55 0.6	3.9		9.5	38.5	56.4	
9.2	22.7	35.1		8.2	40.1	58.9	K	9.4	41 4.0	3.5		9.1	5.8	56.8		9.4	44.7	37.6	
9.5	27.6	12.6		9.0	55.8	32.9	K	9.5	40.2	23.5		9.5	13.6	36.8		9.4	46.2	43.8	
8.2	28.0	52.9	S	9.4	55.9	13.7	B	8.8	51.4	6.2	K	9.3	48.0	51.9		9.2	11 0.4	55.6	
9.3	48.6	1.8		9.5	30 5.1	24.5		9.3	55.6	25.7		9.1	56 21.2	21.4		9.0	13.5	11.0	
9.5	56.0	51.4		9.2	18.7	46.0		8.8	56.7	11.1	K	8.6	52.3	58.0		9.5	30.5	49.0	
9.5	20 10.5	27.0		9.5	37.5	27.7		9.2	42 10.8	32.1		9.5	57 3.3	55.8		8.3	52.7	29.8	
9.5	11.3	20.5		9.0	37.6	13.4	K	8.2	25.4	16.5	K	9.5	8.7	35.5		9.0	59.2	6.0	
8.9	15.8	45.2		9.5	43.0	3.0		9.3	48.7	21.5		9.2	14.8	58.3		6.5	12 11.5	2.9	K
9.5	32.5	1.2		9.4	51.4	58.2		9.2	50.1	25.7	K	9.3	58.4	43.2		9.3	24.7	30.0	
9.3	35.8	8.0	B	9.5	52.8	11.1		9.5	43 1.9	55.1		8.7	59.7	10.6	K	9.2	28.6	3.1	B
9.2	47.7	11.1	K	9.4	55.4	54.8		8.5	22.3	20.0	K	9.2	58 6.7	22.7		8.5	37.7	52.7	K
8.3	21 4.5	14.1	K	8.8	31 12.0	26.7	K	9.3	35.9	28.9		9.4	18.5	3.7		9.4	51.6	20.4	B
9.3	22.8	32.0	B	9.1	19.2	31.4		9.5	41.4	53.3		9.4	35.4	41.8		9.0	58.2	27.9	
9.5	32.1	57.6		9.3	20.7	8.2		9.1	48.1	49.1		9.5	47.8	45.5		9.5	13 7.7	4.6	
9.5	42.5	56.4		9.1	21.8	29.0		9.3	44 46.1	25.1		8.9	49.8	1.0	K	9.5	8.6	8.1	
9.3	43.1	25.3		8.9	25.1	0.0		9.5	45 6.7	11.0		9.5	51.3	45.7		9.1	14 9.2	36.2	
9.3	48.7	34.1		8.9	43.5	3.8		9.5	9.4	42.7		8.2	52.3	31.9	L	8.3	11.9	22.8	K
9.3	49.4	41.8		8.5	48.8	7.7	K	8.7	50.2	10.1		8.8	58.0	50.9		9.4	25.0	42.9	B
8.5	22 8.2	35.6	K	9.4	53.0	54.6		9.5	57.0	2.7		9.5	59 16.8	33.6		9.5	27.6	45.9	
9.5	37.9	55.6		8.1	54.5	40.5	L	9.2	46 29.6	37.1		8.8	25.9	29.2		9.3	28.2	16.2	
9.5	57.0	52.4		8.6	56.2	46.4		7.0	34.1	22.3	K	8.8	26.1	38.3		9.5	40.2	46.6	
9.5	23 4.9	55.6		9.4	32 6.0	1.4		9.5	56.2	15.8		9.5	32.2	21.5		7.8	15 22.9	3.3	K
8.3	8.2	35.1	L	7.7	27.4	16.2	L	8.7	58.5	39.8		9.5	0 30.7	34.6		9.0	43.8	22.0	K
9.5	12.2	47.7		9.4	34.1	31.3	B	8.5	47 22.9	4.2	K	9.3	38.9	6.2		8.8	55.6	24.5	K
9.5	33.9	16.8		8.7	33 34.8	21.0	K	9.2	29.8	46.0		9.5	1 6.5	52.6		9.3	16 13.7	16.8	
9.3	37.3	33.6		9.0	38.3	44.5		9.5	45.4	17.3		9.5	29.9	18.5		9.4	33.7	28.4	
9.0	41.2	46.0		9.4	39.4	42.8		8.9	55.5	14.6	R	9.5	38.7	35.8		8.9	37.9	52.8	
9.5	49.1	50.2		9.5	47.9	41.3		9.5	56.2	8.9		9.4	51.7	10.9		8.5	59.0	20.7	
9.0	51.2	46.5	K	9.4	34 25.2	59.5		9.5	48 14.2	59.0		9.5	2 4.3	7.2		9.3	17 26.6	8.3	B
9.5	58.5	13.9		9.5	43.2	10.9		9.5	30.8	41.2	B	9.3	11.5	1.8		9.4	28.4	18.4	
9.1	24 9.0	28.4		9.5	35 18.8	32.4		9.4	40.1	28.7		9.0	41.5	55.0		8.8	29.4	8.1	B
9.2	25 20.0	13.8	R	9.2	24.4	54.4		9.1	53.5	27.6	B	9.5	55.8	44.2		6.5	39.3	42.7	L
9.5	40.5	14.9		9.5	37.6	36.5		9.4	49 3.8	7.7		9.4	58.2	22.8		9.5	50.2	21.3	
9.4	48.0	7.6		9.0	38.1	49.5		8.0	6.5	40.8	K	8.1	3 15.1	11.7	K	8.3	18 2.3	33.1	
8.4	52.5	51.9	K	9.4	55.0	43.6	B	9.5	30.9	29.4		9.5	24.6	2.9		9.4	17.6	4.0	
9.5	56.6	49.7		8.9	36 2.2	46.5	K	9.5	40.2	10.6		9.3	46.9	10.5	B	9.5	56.8	32.7	B
9.5	26 52.6	11.2	B	9.5	20.3	33.6		9.5	59.0	3.7		9.5	4 4.2	21.3		9.5	19 28.9	0.0	
9.5	27 14.4	57.3		8.9	26.0	58.0		9.1	50 1.1	13.6		9.3	6.8	32.7		9.0	44.7	23.0	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ᵘ	+24°			21ᵘ	+24°			21ᵘ—22ᵘ	+24°			22ᵘ	+24°			22ᵘ	+24°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	19 47.2	24.4		9.5	37 41.3	0.7		9.0	55 3.1	21.0		9.5	14 26.2	16.7		9.5	35 35.8	13.8	
9.0	51.2	14.1		9.3	56.0	20.6	B	9.4	31.6	33.8		8.5	29.2	42.6	R	9.5	36 5.7	31.0	
9.1	20 21.8	21.7		4.1	38 5.0	58.9	K	8.9	45.0	4.5	K	9.5	15 2.1	46.2		9.5	13.1	24.9	
9.1	23.7	42.4		9.0	7.6	0.0	B	9.4	57 22.6	0.7		9.3	31.3	8.6		9.5	29.4	1.5	
9.4	21 34.5	19.1	B	7.8	14.7	12.3	R	7.5	53.0	57.7	K	8.7	16 0.1	31.4	R	9.3	37 43.5	1.0	
9.2	55.3	2.4	K	9.5	19.8	37.7		8.9	58 31.5	56.8	K	9.3	10.7	15.9		9.3	43.7	28.3	
9.2	22 7.8	19.0	B	8.2	25.6	1.0	K	9.3	49.6	33.1		8.6	17 10.1	18.9	K	8.7	38 25.4	13.6	
9.5	9.0	55.5		9.4	30.6	32.5	B	9.3	55.5	1.3		9.2	29.7	5.4		9.5	25.8	34.9	
7.8	12.5	2.1	K	9.3	33.4	41.0		8.7	59 30.0	30.6	K	9.5	18 4.2	43.6		9.1	57.2	56.3	
9.3	27.7	26.2		9.4	39 4.2	34.5		9.2	32.7	16.4	B	9.4	19 18.7	57.8		9.3	58.7	11.0	
8.5	49.5	49.3		7.0	22.5	53.9	K	7.8	43.6	26.6	K	9.5	20 53.0	17.1		9.3	39 33.8	17.2	
9.4	55.0	23.4	B	9.5	28.3	7.2		8.7	0 16.0	26.2	L	9.4	21 11.0	11.6		9.1	37.2	4.3	
8.7	23 0.6	2.4	K	6.8	48.4	53.7	K	4.0	18.1	39.0	L	7.5	23.1	8.9	K	9.5	39.7	32.0	B
9.3	24 11.3	9.6		9.5	52.7	33.8		9.5	24.5	4.2		6.8	23.5	3.7	K	8.4	48.8	50.9	B
9.0	15.0	20.0		9.2	40 13.6	4.5		9.5	45.1	52.5		9.5	22 15.6	53.5		9.4	50.0	34.8	
8.5	23.2	8.7	K	9.5	44.2	42.5		8.3	48.4	55.2		9.5	32.0	46.7		9.4	52.1	45.7	
9.2	36.3	8.8	B	8.7	41 8.7	11.7		8.4	56.6	18.3	K	9.4	23 6.3	22.1		8.7	40 8.5	18.6	K
8.8	38.5	30.0		9.4	37.8	18.0		9.5	1 8.5	4.2		8.7	15.5	32.6		9.5	18.4	29.0	
9.4	39.1	38.2		9.0	41.9	37.9		9.4	18.6	59.8		9.3	24 39.3	35.2	B	9.5	19.7	19.5	
9.4	44.3	7.5		9.2	42 43.6	48.0	B	7.0	37.3	50.4	K	9.5	25 6.7	15.6		9.5	33.5	36.5	
9.5	25 8.0	3.9		9.5	44.2	51.8		9.5	2 16.8	35.2		9.4	8.6	7.6		9.5	44.2	54.3	
9.5	14.7	3.5	B	9.2	52.7	37.0		9.2	3 25.8	23.6	B	8.1	32.2	47.0	K	9.4	47.1	32.8	
9.2	20.2	44.1		7.5	43 37.2	54.6	K	9.5	33.2	20.6		8.1	32.4	50.0	K	9.5	59.1	56.5	
8.0	22.0	33.1	K	8.6	58.3	19.7		9.3	39.0	52.4		8.4	26 3.6	54.6	K	9.5	41 14.7	30.7	
9.1	35.1	48.3		9.4	44 17.8	37.9		8.2	39.6	37.8	L	9.5	5.5	11.7		9.0	36.1	35.9	B
9.5	26 5.9	26.9	B	8.3	45 13.3	0.7	B	8.5	4 38.4	3.8	K	9.0	25.0	6.6	B	9.4	49.6	11.4	B
8.9	22.2	45.0	B	8.8	28.2	49.7		9.4	5 12.3	52.2		9.5	45.3	0.4		9.4	42 14.2	34.2	B
9.4	44.1	27.8	B	9.5	38.4	33.5		6.5	24.4	14.9	L	8.5	50.9	20.9	K	8.7	33.7	13.1	
9.1	27 3.2	10.0		8.3	46 1.2	22.7	L	9.5	37.1	17.3		9.3	50.9	12.9		9.2	45.7	39.9	
9.4	53.4	39.2	B	9.0	6.2	5.8	R	8.3	38.4	45.9	K	9.2	51.0	38.3	B	9.3	43 18.3	35.8	
9.5	53.4	3.3		8.5	6.7	9.6	L	9.4	6 5.9	45.7	B	9.4	27 5.7	41.3		9.5	20.1	59.1	
9.5	28 45.8	55.6		9.1	28.3	59.0		9.5	27.2	42.1		9.1	26.5	49.7		9.4	41.9	5.5	
8.5	55.3	31.0	K	9.5	47 0.5	11.6		9.5	51.5	42.6		9.3	45.0	4.8		9.0	47.5	42.3	K
9.5	59.0	59.1		9.0	10.9	55.9		9.5	56.4	21.1		9.3	52.0	51.1		9.5	44 1.7	25.2	
9.2	29 4.4	52.7		8.8	14.8	38.6	K	9.5	57.6	55.0		8.5	28 24.9	56.2	L	9.4	32.9	7.6	B
9.0	39.6	5.8	K	9.3	31.8	5.9	B	9.5	7 1.1	31.6		9.5	42.0	19.9		9.4	36.4	4.4	
9.5	46.3	1.7		8.2	32.6	44.9	K	9.5	17.8	55.0		7.8	49.9	41.4	K	9.1	43.5	29.0	
8.3	30 23.5	57.8	K	9.0	48 30.6	41.5		9.5	23.9	58.1		9.5	29 15.2	12.7		9.2	45 37.8	27.8	B
9.0	50.0	57.1	K	9.5	36.2	45.2		9.5	56.4	26.3		9.2	17.9	50.5		9.5	46 15.9	34.7	
8.5	54.4	41.0		9.5	42.3	35.5		9.1	8 10.3	54.2		9.5	55.5	12.3		9.3	49.1	35.8	R
9.3	55.2	14.1		9.3	48.1	35.5		9.5	32.0	18.8		9.5	30 25.7	47.1		9.3	47 1.6	5.2	B
9.3	31 2.2	48.3		8.5	56.7	21.0	K	9.4	58.5	1.0		9.0	30.0	4.0		9.5	48 41.8	27.5	
9.5	58.1	8.9	B	9.4	58.6	23.0		9.2	9 11.1	12.9	K	8.9	31 18.5	18.3		9.3	49 1.2	48.2	
9.5	58.2	7.9		9.3	49 33.4	52.5		9.5	49.0	8.9		9.5	22.7	3.2		9.5	56.6	59.0	B
6.7	32 13.4	51.8	L	9.3	47.1	12.4		9.5	50.0	13.2		9.5	34.2	6.8		9.5	50 10.5	50.4	
9.5	18.2	11.7		7.8	50 20.6	34.2	K	9.5	10 18.9	30.5		9.4	50.5	28.5		9.5	23.3	22.7	
9.3	39.7	10.6		9.5	48.2	53.5		8.6	34.6	4.6	K	9.4	51.8	49.0		9.5	51 25.3	57.2	
9.5	42.7	31.0		9.5	51 14.0	40.8		9.5	11 5.4	21.9		9.3	58.5	35.3	B	9.4	39.9	10.0	
8.6	33 10.6	17.7	B	8.3	15.2	4.1	K	9.2	26.7	2.0		9.4	58.5	29.0		8.3	57.3	9.1	K
8.5	39.5	19.7	R	9.5	39.6	52.8		8.8	33.0	46.3		8.9	59.7	4.5	B	9.0	52 1.6	38.0	
9.5	34 6.2	55.8		9.5	40.1	22.8		8.3	47.8	15.8	K	9.3	33 3.0	11.5		8.3	27.5	20.3	K
9.4	21.7	24.5		9.5	52 3.7	59.7		9.4	54.7	46.3		9.3	4.8	36.3	K	9.4	28.7	51.0	
9.4	35 52.9	0.1		9.5	34.1	56.7		9.4	12 13.0	1.8		9.3	34.8	9.1		9.2	33.8	28.8	
9.3	36 10.3	1.9		9.3	53 1.2	21.8	B	9.2	14.0	15.3	K	8.9	52.5	41.1	L	8.3	42.5	51.8	K
7.7	36.4	51.8	K	8.7	16.4	36.6	K	9.4	39.6	4.2		9.5	55.8	4.5		9.2	53 23.2	3.8	
9.4	39.4	19.9	B	9.5	42.0	59.4		7.4	13 8.8	59.8	K	7.3	34 7.9	27.6	K	9.5	54 36.3	0.3	
8.7	59.2	19.4	K	9.5	57.1	21.6		9.3	16.7	38.0		8.8	30.2	5.7	K	9.2	36.9	59.2	
9.0	37 12.9	53.8		9.1	54 21.5	54.3		9.3	50.2	21.3		9.3	38.8	50.0		9.5	37.4	7.5	
7.5	34.2	30.0	L	9.3	43.8	9.0	B	9.5	58.8	35.0		9.5	35 5.7	11.8		9.4	52.5	28.7	
8.8	39.7	40.0		9.5	53.8	44.3	B	8.2	59.1	13.1	K	9.4	20.8	38.5		9.5	53.4	37.5	

4701—4738					4739—4775				4776—4812				4813—4849				4850—4886			
	22ʰ—23ʰ		+24°			23ʰ		+24°		23ʰ		+24°		23ʰ		+24°		23ʰ		+24°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	54	54.4	44.8		9.2	9	14.3	40.0	K	7.8	19	45.9	36.2	K	8.1	33	26.0	58.5	K	9.1	44	39.8	6.8	B
8.6	56	18.7	44.9	K	8.7		28.1	45.1	K	8.1	20	14.8	40.4	K	8.7	34	38.8	26.4		9.0		41.1	12.3	
9.4		49.4	25.5		9.5		32.9	52.8		6.5		30.4	21.9	K	8.9		47.0	49.4		8.3	45	16.8	58.5	K
8.7		51.8	23.3	K	9.1		45.5	55.3	K	9.3		48.0	52.2		9.5		54.8	10.4	B	8.9		38.6	1.1	
9.5	57	12.9	3.3		9.5		53.0	11.0		9.5	21	47.8	59.2		9.3	35	12.9	24.2		9.5		45.4	4.3	
8.5	58	1.2	38.0		9.3	10	0.1	14.0		9.4	22	11.9	0.6		9.4		13.6	8.9		9.0	46	36.0	36.9	
9.2		7.1	58.1		9.3		22.4	14.0		9.3		17.7	33.3		9.0		29.5	36.9		8.0		57.5	20.3	K
9.5		34.9	51.4		8.5		52.5	5.9	K	9.1		23.4	55.7	K	9.4	36	7.3	26.0		9.5	47	6.4	44.6	
9.5		44.5	43.1		9.5	11	14.8	18.7		9.5		33.1	53.3		9.5		17.4	32.1		9.4		47.1	15.5	
9.5		55.4	44.7		9.3		25.4	0.5		9.5	23	11.2	21.9		7.8		17.5	17.2	K	9.2		54.2	9.0	
9.2	59	4.8	41.0		8.6		36.7	26.3	K	8.9		15.6	50.3	K	9.5		56.8	26.1		9.2	48	16.4	23.0	
9.0		7.5	18.9	K	9.0		55.4	48.3	K	9.5		31.3	35.3		9.2	37	14.5	15.0		8.5		17.1	20.3	B
8.9		31.7	21.1	K	9.4	12	8.0	4.5	B	9.5		45.6	11.5		9.1		27.0	16.2		8.6		43.9	32.7	L
8.7		48.2	14.5	K	8.0	13	2.5	38.7	K	9.5	24	0.6	57.9		9.5		28.4	3.4		9.0	50	1.5	18.4	
9.2		55.6	1.5		9.2		41.6	52.2		8.5	25	0.8	46.9		8.8	38	10.5	52.1	K	9.0		13.6	31.4	
5.3	0	6.2	40.8	K	9.3		58.2	46.4		9.2		8.2	27.3		8.5		18.5	39.9	K	4.3		23.0	19.7	L
9.5	1	22.4	27.2		9.2	14	9.1	26.0		8.5		20.9	53.5	B	9.1		40.6	27.0		9.0		47.4	55.7	
9.3		24.3	24.7	B	9.2		13.0	3.0		9.2	26	9.4	39.5		9.5		58.0	3.6		9.5		59.7	4.4	
8.6		44.5	17.2	K	8.5		23.4	8.3	K	9.1		56.0	3.7		9.2	39	3.5	53.4		8.5	51	28.5	40.0	K
9.1	2	12.1	35.2		8.9		37.3	21.3	B	9.3	27	9.4	49.7	B	9.1		33.9	34.0		8.9		34.6	47.3	
9.5		19.5	2.4		8.7		42.0	25.4	K	9.5		13.0	39.7		9.5	40	10.1	57.3		9.0		46.8	0.0	
9.5	3	13.0	43.5		9.4	15	20.8	4.8	B	8.5		16.0	28.0	K	7.0		13.0	46.5	K	9.0	52	28.1	51.7	K
9.5		49.9	54.1		8.8		31.7	8.8	K	8.4		58.6	28.9	K	9.5		48.8	59.3		9.0		30.0	25.5	K
8.2	4	0.0	35.8	K	9.1	16	2.3	57.7	K	9.2	28	25.1	26.5	K	6.8	41	13.2	51.1	K	9.2	54	1.5	27.9	
9.3		11.2	32.5	B	9.5		12.4	56.0		9.0	29	15.8	21.1		9.0		13.5	16.6	K	9.3		6.9	49.5	
9.0		18.1	51.4		8.3		31.5	30.3	K	9.5		21.9	1.9		9.3		44.7	36.7	B	9.5		10.7	22.4	
9.1		32.3	48.0		9.0		42.0	26.8	L	9.1		38.0	4.4		9.5		45.0	13.8		9.5		16.8	57.8	
9.5		43.4	56.6		9.0	17	0.4	13.5		8.3	30	2.7	56.7	K	9.0		52.0	10.4		8.9		24.3	26.8	
9.3		44.9	49.0		9.4		5.5	43.8		9.5		8.9	8.1		8.1		56.0	33.4	K	8.3	55	4.0	20.0	R
8.9	5	7.4	17.5		9.3		9.0	44.8	B	9.4		11.8	16.0		9.5	42	5.9	35.9		9.2		30.9	0.2	
8.2		35.8	47.1	K	9.5		18.8	47.8	B	8.5		17.9	2.9	K	8.6		7.7	57.3	K	9.2		57.7	20.4	
9.5	6	42.9	48.6		7.8		35.3	42.1	K	9.4		40.3	21.8	B	6.8		51.6	2.8	L	9.4	57	13.1	27.5	
8.2		54.4	39.7	K	9.4	18	13.7	53.3		9.5		44.4	6.7		9.4	43	2.4	52.8		9.4		35.2	19.3	B
9.0	7	58.8	52.5	R	9.5		19.1	2.3		8.8	31	26.7	26.5		8.3		22.0	29.4	L	9.5	58	15.8	47.6	
9.3	8	5.2	50.1		7.1		29.8	9.9	K	9.3		34.3	0.3		9.0		23.0	23.5		9.5		27.9	47.9	
8.6		9.4	42.4		8.0		54.2	52.6	K	9.2	32	16.8	30.9		8.9	44	21.8	33.4	K	6.8		35.0	6.7	K
7.0		16.9	52.8	L	9.5	19	10.4	1.9		9.4	33	9.2	28.1		9.5		36.0	45.0		9.5		37.1	56.3	
8.1		27.9	9.4	R																				

Zone +25°

1—40				41—80				81—120				121—160				161—200			
	0h	+25°			0h	+25°			0h	+25°			0h	+25°			0h—1h	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	0 28.4	8.7		9.5	14 58.4	33.1		8.8	28 42.2	21.5	K	9.4	40 59.4	4.2		8.5	56 17.3	49.4	K
9.3	43.8	36.5		9.5	15 41.1	41.0		9.5	29 9.3	54.9		9.2	41 28.4	50.0		9.4	39.9	20.8	
9.5	1 4.8	29.1		9.5	49.5	32.5		9.4	15.0	39.7		8.8	31.9	34.0	K	9.4	48.2	11.0	
9.5	11.5	16.0		9.5	56.2	24.6		8.8	17.3	22.5		9.0	43 23.8	40.1		9.1	57 18.7	27.3	
9.3	21.9	28.0		9.5	16 11.9	55.8		9.2	21.4	2.2		9.3	31.9	55.5		8.3	58 21.0	56.9	
9.3	25.8	12.5	B	8.4	50.0	35.5	K	9.5	25.6	19.7		9.3	33.5	51.8		9.3	49.3	35.1	
8.7	44.2	13.9	K	9.5	17 19.1	29.7		8.3	30 6.6	18.8	K	9.5	44 25.8	5.8	B	9.5	59 41.0	1.0	
9.5	47.9	15.0		9.5	31.2	38.6		9.0	7.5	18.0	B	9.5	26.4	28.3		9.5	41.5	7.6	
8.5	2 7.4	52.0	K	9.5	54.5	20.0		8.5	8.9	31.1	K	9.5	29.6	9.3		9.1	0 2.9	14.7	
9.5	3 34.9	40.5		9.5	56.3	48.0		8.1	12.9	2.3	K	9.3	39.8	47.9		8.9	30.8	8.0	K
9.5	38.8	30.8		9.5	18 14.9	8.6		8.8	42.1	38.3	K	8.0	44.3	46.9	B	9.1	34.7	32.2	
9.5	4 12.9	11.5		8.8	38.6	4.3		6.5	31 19.8	31.8	K	9.5	45 47.1	2.8		9.5	53.4	27.8	
9.5	59.3	43.5		9.5	19 7.1	15.0		8.6	48.7	55.6	K	9.4	46 14.8	14.0		9.1	59.0	48.4	
9.5	5 14.2	42.5		9.5	14.8	54.7		9.5	32 15.8	52.8		9.1	47 24.8	47.0		9.5	1 21.8	45.6	
9.0	43.4	31.2		7.5	50.8	29.3	K	9.4	21.0	14.3		8.5	46.1	35.9		9.5	22.2	26.8	
8.5	50.8	0.9	K	9.2	56.2	36.6		7.8	37.0	52.6	L	8.0	48 56.9	33.3	K	9.5	46.3	52.8	
9.5	6 8.3	30.1		9.2	57.1	43.1		8.8	33 45.1	6.0	K	9.5	49 13.2	55.4		9.5	56.0	7.1	
7.4	39.2	27.3	K	9.0	20 52.4	43.5		9.5	47.2	26.0		9.5	23.1	47.7	B	9.5	59.2	25.8	
8.7	48.6	27.7	K	9.5	59.1	19.4		9.3	49.5	55.5		9.4	51.1	15.6		9.5	59.3	39.4	
9.4	7 11.9	23.9		9.5	21 29.3	7.7		9.3	53.0	44.1		9.4	52.4	53.3		9.2	2 42.1	24.8	
9.4	14.0	51.1		7.9	49.5	42.4	K	9.2	34 4.1	1.3		9.4	50 10.6	28.7		9.5	49.5	33.5	
9.2	8 13.8	34.9		9.5	22 43.6	6.4		8.3	7.1	58.0	B	9.5	49.0	7.1		9.5	55.2	2.0	
9.2	30.6	1.8		9.5	23 13.1	8.8		9.1	33.2	50.7		9.4	51 18.8	7.8		9.5	3 12.9	54.2	
9.0	39.0	38.0	K	9.5	27.8	22.2		8.8	35.4	7.8	K	9.3	47.5	20.3		9.5	25.0	33.6	
8.8	50.9	17.8	K	9.0	41.5	40.5		9.5	57.4	50.7		9.5	52 22.7	32.2		8.7	25.4	4.4	K
9.4	10 11.1	40.1		9.5	24 15.0	27.5		9.5	35 6.2	3.9		9.5	27.7	56.2		9.5	4 23.2	24.7	
8.8	13.9	46.6	K	8.9	40.8	0.7		9.5	36 10.1	25.0		8.5	37.3	37.9	K	9.5	25.4	56.1	
9.5	40.0	9.1		9.4	58.2	12.6		9.5	35.6	7.5		8.8	53 2.4	22.7		8.8	57.7	13.5	
7.0	58.8	21.1	K	9.5	25 15.9	42.8		9.5	51.5	38.4		9.4	10.4	7.8		9.3	5 11.8	2.5	
9.5	11 9.5	0.1		9.5	57.6	32.0		8.4	54.4	57.8		8.2	20.9	41.5	K	9.4	26.5	54.0	
9.5	22.9	33.2		9.5	26 12.4	13.0		9.1	37 55.3	2.3	K	9.4	42.0	44.5		9.5	35.4	16.7	
9.5	28.4	58.4		9.5	13.8	27.3	B	7.0	38 4.5	22.9	K	9.5	43.5	11.6		7.5	39.3	41.0	K
9.2	46.5	12.5		9.5	19.5	55.8		9.5	14.4	38.4		9.5	54 7.7	33.2		9.3	44.2	15.4	
7.3	50.5	39.7	K	9.5	26.5	56.1		9.4	42.9	58.8		9.2	51.8	58.8		7.5	50.7	28.5	L
9.5	12 53.2	4.6		9.5	48.9	3.3	B	8.8	39 18.5	15.7	K	9.2	54.9	52.1		9.2	6 1.4	38.2	
9.5	13 11.1	24.5		9.5	54.6	56.6		8.9	37.2	29.1		7.0	55 0.4	32.1	K	9.1	2.0	30.2	
8.0	13.8	41.1	K	9.0	27 5.5	15.3	K	8.6	49.8	26.5	R	9.5	2.2	42.2		8.3	13.1	3.4	K
9.5	33.5	50.7		8.1	17.1	39.4	K	7.0	40 0.9	29.1	K	8.0	44.6	31.9	K	9.2	40.8	9.5	K
9.5	52.9	42.1		9.5	19.4	49.5		9.2	34.5	26.0		9.5	56 14.0	16.1		9.5	52.2	10.7	
9.5	14 19.2	58.3		9.5	28 27.2	25.6		9.1	41.5	39.7		8.6	13.7	47.8		8.5	55.2	40.5	K

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+25°		1ᵘ		+25°		1ᵘ—2ᵘ		+25°		2ᵘ		+25°		2ᵘ—3ᵘ		+25°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.0	7	14.1	49.0		9.5	23	53.4	54.5	9.5	47	1.4	18.3	9.0	11	43.3	52.5	6.7	35	26.4	1.8	L
9.5		20.3	6.6		9.5	24	52.3	18.0	9.5		19.0	28.0	9.4	12	20.8	38.8	9.5		41.5	30.2	
9.5		38.5	47.2		8.6		52.7	52.5	K 8.0		24.2	24.3	9.5		25.1	55.5	9.5	36	18.8	54.7	
9.5		58.5	54.2		9.0	25	49.2	45.4	9.5		37.3	59.2	8.9	13	18.8	25.4	9.3		30.1	37.1	B
7.0	8	11.8	0.2	K	7.4	27	23.1	56.0	K 9.5		54.7	47.5	8.9		20.7	51.0	9.5		39.5	14.8	
9.2		44.9	40.6		9.5	28	23.2	8.6	9.5	48	7.9	4.8	9.4		32.5	25.0	9.4	37	1.0	54.5	
9.1		53.2	16.2		9.0		32.8	18.0	9.5	49	1.0	10.3	8.8		56.7	30.2	K 9.5		27.5	34.4	
9.5	9	16.9	47.4		9.3	29	0.6	54.1	9.0		2.8	8.1	K 8.7		57.5	36.4	B 9.5		38.2	52.2	
9.4		22.9	29.0		8.0		52.5	9.9	K 9.0		4.1	34.8	9.0		58.0	34.6	K 8.0		46.5	3.3	K
9.0		27.2	31.5		9.4		54.4	3.2	9.5		7.2	53.5	9.5	14	7.4	50.2	9.5	38	56.3	20.6	
7.7	10	14.3	41.6	L	8.7	30	44.6	42.0	K 9.5		45.3	35.8	9.4		53.6	10.2	B 9.5	39	18.8	51.3	
8.4		22.9	20.3		8.7		45.1	54.1	8.7		49.4	47.1	9.0	15	1.8	10.5	B 8.6	40	13.8	32.7	L
8.8		26.8	58.5		9.5	31	12.9	31.0	8.6	50	13.5	4.7	K 9.1		7.5	43.3	9.5		18.0	3.9	B
9.3	11	5.3	7.9	B	8.7		56.8	45.1	K 9.0		19.0	32.7	8.8	16	42.5	32.6	9.5	42	10.6	54.7	
9.5		30.6	10.2		9.2	32	36.9	59.4	9.5	51	23.7	53.1	9.0		45.7	45.5	9.5	44	29.7	26.4	B
9.0	12	16.1	15.5		6.0	33	14.7	0.5	K 9.4	53	22.8	36.5	9.1	17	28.8	54.7	8.8		39.8	19.0	B
9.5		25.8	40.4		9.5		19.4	4.9	8.9		49.0	32.0	9.1		44.3	5.5	9.5	45	35.1	44.6	
9.5		29.6	35.2		9.0		34.2	52.8	9.5	54	22.0	30.1	B 7.5	18	37.9	23.6	L 9.5	46	1.2	58.5	
9.2		42.5	25.7		8.9		46.5	43.4	8.5		54.1	22.8	9.5		57.1	35.4	8.8		48.7	56.6	
9.3		51.5	43.7		9.0		48.0	24.8	K 8.0	55	14.2	48.9	9.3	19	21.0	39.1	9.0	47	1.2	36.0	
9.4		52.8	37.6		9.5	34	20.0	8.6	6.0		26.6	14.0	K 9.4		22.0	50.5	9.4		2.3	17.1	
9.2	13	14.6	42.8		9.4	36	2.1	34.5	9.4		57.1	52.2	9.5		35.2	21.0	9.5		5.6	51 6	
9.5		27.4	28.3		9.4		7.5	56.5	7.2	56	9.0	13.8	K 9.5		40.6	40.2	9.5		8.9	50.7	B
8.7	14	0.3	48.7	K	9.4		20.2	50.7	8.5		23.9	34.3	9.2		49.5	11.4	K 9.5		8.9	42.5	
9.5		8.2	22.9	B	9.5		28.9	2.2	B 9.5		26.0	17.1	9.5		50.1	20.0	8.2		36.1	30.2	K
9.0		14.7	42.6		9.4		29.3	54.6	9.2	57	18.5	28.8	9.1	20	11.7	54.9	9.3	48	4.6	0.6	
9.0		24.1	51.0		9.5		38.6	2.9	9.1	58	10.9	19.2	9.5		36.8	8.8	8.6		46.3	57.9	K
8.1		39.9	48.6	K	7.3		44.1	3.5	K 7.4		31.3	8.6	L 9.5	21	15.5	37.1	9.5		54.5	58.8	
9.5		54.0	54.8		9.4		55.3	59.6	6.5		38.0	0.3	K 9.5		39.6	37.3	9.1	49	0.4	57.3	
9.5	15	1.8	51.0		9.0		55.5	45.9	7.6		41.2	37.7	B 9.5		50.9	53.5	9.1		22.5	17.5	K
9.5		45.9	18.0		9.5	37	0.0	39.0	9.5	59	27.3	24.7	9.3	22	28.5	49.5	9.1		30.1	23.6	
8.2		53.6	9.3	L	9.4		17.2	2.1	9.1		43.7	35.3	9.2		31.9	7.0	9.5	50	26.2	46.8	
9.2		55.2	23.3		8.4		43.1	40.0	K 9.5		58.7	48.8	9.5		46.3	44.5	B 9.3		44.5	51.8	
8.9	16	15.5	57.0	K	9.5	38	27.1	13.5	8.5	1	3.0	15.3	B 9.4	23	3.9	38.3	9.5	51	30.1	34.8	
9.4		33.2	42.8		7.3		40.2	11.4	K 5.0		11.2	15.9	K 9.5		39.8	46.5	9.5	53	7.5	13.3	
9.4		40.7	0.1		9.5		47.0	5.3	9.1		30.2	41.6	9.1		50.4	56.6	9.5		22.5	27.1	
9.5	17	0.4	12.3		7.0		57.1	26.2	K 8.7		35.4	48.9	K 9.0	24	3.2	36.5	5.8		22.8	54.0	K
8.5		5.7	46.0	K	9.0	39	6.8	41.7	8.8		36.5	30.9	9.5		15.3	54.0	9.5		59.5	32.0	B
9.5		35.8	34.0		9.5		7.9	56.0	9.4	2	38.6	2.7	9.4		27.2	29.5	9.1	54	40.8	29.2	
9.0		51.0	25.8	B	9.5		35.9	23.4	9.5		42.2	40.2	8.8		41.8	37.7	9.4	55	15.5	42.7	
9.5	18	0.3	22.2		9.5		42.7	53.5	9.4		50.0	10.2	9.5		44.6	41.5	9.5		24.9	58.8	
9.5		1.7	26.2		9.5	40	7.8	11.4	6.8		57.9	14.4	K 9.5	26	21.9	2.8	B 9.5	56	4.6	7.8	
9.3		5.9	30.5		8.4		9.1	32.4	L 8.3	3	13.0	25.1	K 8.7	27	7.2	47.6	9.5		37.8	28.9	
9.4		13.0	37.6		9.4		43.7	46.9	B 9.4		33.2	59.3	9.5		38.8	36.7	8.4		59.1	18.1	B
9.5		34.8	53.8		6.5	41	20.6	45.8	K 9.3		58.0	55.1	9.5	28	9.8	43.6	9.0	57	0.5	39.2	B
8.1		54.9	45.2	B	9.3		21.0	26.9	9.3	4	22.9	40.5	8.8	29	18.0	50.3	9.4		1.3	45.5	
9.1	19	23.4	2.6		8.2		48.5	1.0	K 9.5		58.4	51.7	9.5		26.1	8.9	8.9		39.2	27.1	
9.5		50.1	31.0		8.7		49.4	6.5	7.3	5	46.0	57.0	K 8.6		33.5	34.0	K 9.5		53.9	59.7	
9.5	20	11.0	41.3		9.5	42	35.1	57.5	9.5	6	3.5	43.7	9.5	30	6.8	45.3	9.5	58	25.5	24.7	
9.5		11.8	50.7		9.5		38.6	48.9	9.5		45.5	20.9	8.8		12.1	36.4	K 9.2		38.0	56.8	
9.5		42.8	50.4		7.7		51.8	7.6	K 9.3	7	5.9	37.3	B 8.9		19.0	54.0	9.5		40.6	9.9	
9.5		47.8	38.6		9.0		54.5	31.7	8.4		22.2	58.1	8.7		57.5	14.7	K 9.4		42.4	17.1	
9.5		58.2	0.5		8.9	43	10.1	31.7	6.1		28.2	6.4	L 9.1	31	10.8	21.2	9.1	59	1.5	22.4	
9.5	21	3.3	52.3		8.0	44	5.5	28.0	9.5	8	6.5	40.7	9.1		36.0	49.4	9.3		23.4	29.1	
9.5		24.1	25.2		9.5		25.9	55.6	9.5		15.4	20.5	9.5	32	9.8	16.4	7.9		53.8	48.1	B
8.2	22	29.5	59.4	K	8.6		32.3	46.0	9.4		56.2	24.3	8.0		17.2	59.9	R 8.5		54.5	24.6	B
8.0		39.6	36.0	B	7.0	45	5.8	18.2	K 9.2	9	20.6	12.5	K 8.5	33	38.3	14.1	B 8.0	0	9.8	1.8	K
7.0		39.8	8.7	K	9.4		10.5	1.0	9.3	10	56.3	5.7	R 8.7	34	2.0	53.2	9.5		20.9	42.0	
8.3		49.9	44.5	K	7.5		47.2	4.0	K 9.4	11	3.1	22.0	9.4		9.4	8.1	9.5		24.4	48.5	
9.5	23	9.9	58.0		9.4	46	59.8	38.2	9.4		18.8	52.9	9.5		36.6	28.8	8.8	1	9.2	44.0	K

501—560				561—620				621—680				681—740				741—800			
	3ᵘ	+25°			3ᵘ	+25°			3ᵘ—4ᵘ	+25°			4ᵘ	+25°			4ᵘ—5ᵘ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	1 20.6	22.3		8.8	22 31.8	55.5		9.1	41 10.5	12.1	B	8.4	3 1.6	36.3		9.5	42 41.5	2.6	
9.1	42.7	31.2		9.2	33.4	44.5		9.3	16.1	29.4		8.5	39.7	39.4	K	9.0	42.9	43.9	K
9.2	45.5	46.0		8.9	37.4	39.6	B	8.8	17.2	35.8	B	9.5	5 5.4	55.8		9.5	43 13.1	9.5	
9.5	2 22.9	52.0		9.5	47.3	46.9		6.0	35.0	8.8	K	9.3	19.7	57.2		9.2	44 16.0	14.9	
9.5	41.0	36.0		9.0	53.1	13.4		9.3	42 19.1	36.7		7.6	43.5	53.2	K	9.4	26.4	1.5	
9.5	48.3	20.6		9.5	23 49.4	42.3		9.2	22.2	8.6		9.5	6 15.2	53.7		7.5	44.3	7.7	K
9.1	3 20.8	17.1		9.4	24 46.9	55.6	B	8.4	35.0	54.7	K	9.4	48.9	2.6		9.5	45 2.7	41.1	
9.5	24.9	5.3		9.4	50.0	11.1		9.2	36.2	12.6	R	9.0	7 20.6	9.7		9.4	28.9	1.7	B
9.5	25.7	1.9		9.5	53.5	5.0		9.1	43 1.8	38.4		9.5	35.1	11.1		9.3	36.4	1.5	B
8.3	4 46.5	51.3	K	9.1	25 6.9	45.8		8.3	2.6	24.6	K	8.1	50.6	59.5	B	9.1	46.9	29.4	
9.5	5 32.8	35.7		9.5	27.1	3.6		8.0	13.2	33.2	K	9.5	56.6	31.2		9.5	54.0	9.0	
9.5	58.6	8.2		9.4	34.0	55.8	B	8.1	25.4	47.5	B	9.1	8 4.4	22.9		9.3	46 12.2	58.0	
9.3	6 10.5	51.4		9.5	54.9	9.1	B	9.1	27.4	47.7	B	9.3	52.8	53.2		8.2	24.9	2.8	K
9.5	12.3	7.0		9.5	26 48.3	38.2		9.2	33.6	30.0		9.5	9 1.5	24.9		9.5	35.6	55.3	
8.0	39.0	56.8	K	9.5	50.8	5.8		9.2	59.2	12.4	R	9.4	35.2	48.2		8.8	47 22.3	6.0	
9.5	7 38.9	3.8		9.1	27 6.9	20.9		9.5	44 1.1	54.6		9.5	45.0	53.5		9.5	48 4.9	32.8	
8.3	56.5	40.5	K	9.5	38.4	32.0		8.6	23.6	5.9	K	9.5	55.2	53.5		9.5	8.4	35.7	
9.4	8 8.8	22.0	B	9.5	28 4.3	8.6		9.2	39.7	12.4	B	8.9	55.6	47.4	B	9.5	37.2	8.8	
9.5	21.5	19.0		9.4	12.1	25.8	B	8.3	45.4	29.8		9.0	10 14.1	36.0		9.4	52.2	29.5	
9.5	22.4	25.9		8.0	27.5	31.2	K	8.4	46.2	18.8	K	8.0	34.7	53.0	K	9.5	49 7.6	54.3	
8.1	26.6	2.9	L	9.2	29 34.8	16.8		6.6	50.8	14.6	K	9.3	56.1	24.9		9.0	9.4	24.2	R
9.5	43 5	47.4		9.4	30 17.5	35.8	B	8.6	45 57.6	15.0	K	9.0	11 10.7	28.5	B	8.4	21.3	52.1	K
9.5	52.8	16.7		9.4	37.1	4.8	B	9.3	46 8.1	12.9		7.8	40.0	28.7	K	9.5	55.0	38.1	
9.5	57.4	29.3		8.9	46.9	40.2		9.4	47 28.7	20.0	B	9.5	12 55.2	15.0		9.5	50 39.0	2.0	B
9.5	9 12.7	50.8		9.5	31 20.6	20.2	B	9.5	48 17.8	37.0		9.4	13 5.0	55.6		8.7	39.7	34.8	K
9.3	20.9	1.5		9.5	28.4	9.6		9.5	44.6	19.4		9.5	40.2	59.6		8.0	42.9	43.0	K
9.4	26.7	25.2	B	9.2	32 12.3	51.4		9.5	49 5.6	57.1		5.7	46.4	16.6	K	9.5	51 25.2	2.0	
9.2	40.9	53.0	B	9.1	12.6	8.8		9.5	30.4	3.6		9.1	14 30.5	10.6		9.5	52 40.6	58.8	
9.3	46.3	22.2		9.0	12.9	24.5		9.0	50 7.6	25.6		9.5	15 56.7	2.7		8.8	41.9	44.4	
9.4	10 3.7	49.5		9.1	25.8	31.4		9.0	9.6	27.7		7.6	16 20.9	24.7	K	8.9	53 54.6	33.9	K
9.2	11.6	45.4	B	9.5	51.9	9.6		9.5	20.0	52.5		9.5	22.6	28.5	B	9.5	56.2	17.8	
9.2	24.7	56.6		9.5	34 0.2	17.7	B	9.5	27.8	49.3	B	9.5	52.1	34.7		9.4	54 15.0	41.6	
9.4	11 4.1	35.1	B	7.0	26.3	12.4	K	9.5	44.1	37.0		9.3	17 5.2	13.7		8.5	30.4	33.0	K
9.2	20.7	5.0	B	9.5	35.7	45.1		9.4	52.5	56.9		9.3	18 57.9	5.0	B	9.5	55 49.6	36.7	B
9.4	36.2	10.5		9.3	35.7	8.8		9.3	51 1.6	10.5		9.2	19 10.3	23.5		9.5	56 13.8	28.9	
6.5	49.9	8.2	P	9.3	40.4	9.4		9.1	41.6	23.5		9.5	20 19.2	52.8		9.5	57 12.7	28.5	
9.1	13 19.0	34.3		8.3	54.0	17.5	K	9.5	52.5	46.3		9.4	27.3	22.6	B	9.5	21.7	36.4	
9.5	14 34.5	3.7		8.4	56.9	39.6	B	9.5	52 0.8	59.3		9.5	21 17.1	8.5		9.5	25.7	50.1	
9.4	54.2	22.3		7.4	35 1.9	54.6	L	9.5	21.6	35.9		9.0	22 58.7	35.2		9.0	51.1	53.3	
9.3	15 11.9	33 7		8.3	10.5	15.8	K	9.5	24.7	26.8	B	7.3	28 33.6	26.3	K	9.5	58 10.8	50.8	
9.5	32.0	31.5		8.0	20.5	24.4	K	9.5	54.6	34.9		9.5	29 15.0	59.3		9.5	48.0	23.6	
9.5	16 35.4	17.6		9.5	28.6	51.3		8.7	53 9.1	30.8	L	9.5	31 15.3	18.3		9.4	59 26.2	25.8	
9.0	47.3	27.3		9.5	59.8	17.4		9.0	31.1	30.4	K	8.3	32 14.4	43.5	K	9.1	36.3	45.4	
9.5	17 3.6	13.1		9.5	36 24.2	5.3		8.1	56.6	31.1	K	9.5	33 28.9	33.5		9.5	45.6	38.2	
8.6	11.3	20.3	K	9.1	34.8	31.0		9.4	55 3.4	24.9	B	8.5	34 11.4	57.1	K	9.5	0 22.6	12.7	
9.5	30.3	53.6		9.5	43.4	17.2		9.5	5.2	20.4		9.5	35 14.6	24.2		9.0	46.1	33.4	
9.0	18 55.4	23.7		8.5	50.7	9.6	L	8.7	27.5	0.4	L	9.1	32.7	15.3		9.3	48.5	37.1	
9.5	19 21.4	4.7		9.4	54.2	53.1	B	9.4	46.1	27.0		9.4	47.0	39.8		9.5	1 23.7	57.0	
9.1	27.9	0.2		9.1	56.0	24.1		9.4	56.3	4.6		9.4	36 50.5	26.6		9.5	25.7	29.5	
9.0	36.5	57.1		9.5	37 1.6	8.8		8.3	59.7	47.6	K	9.5	52.6	12.5		9.1	2 3.5	47.0	
8.0	42.8	45.8	K	8.4	17.1	37.2	K	8.4	56 9.0	1.7	K	7.5	37 19.3	46.0	K	9.5	35.0	51.6	
9.5	59.3	18.8		8.5	17.5	31.3	K	9.5	30.6	15.8		8.9	38 11.4	53.9		9.4	48.1	2.3	
9.5	20 9.5	10.6		9.3	29.8	46.8		8.8	46.6	40.4		9.4	45.6	53.2	B	9.3	3 12.5	34.8	
7.9	18.8	48.5	K	9.1	35.3	0.1		9.0	57 9.1	23.6		8.4	39 12.7	32.2	K	9.5	20.7	41.2	
9.1	49 0	9.2		8.5	49.7	23.5	K	7.5	19.0	48.1	L	9.5	30.2	50.8		9.5	28.2	8.0	B
9.5	21 13.9	1.7		8.9	38 15.4	11.3	K	9.4	23.2	5.2		9.0	41 20.7	4.9	K	9.3	29.3	33.0	
9.5	31.8	30.3		9.4	37.0	3.8		8.2	55.6	19.7	L	9.5	32.2	48.0		9.2	41.0	2.0	
9.0	22 4.4	13.3		9.5	39 6.6	53.0		7.5	59 53.6	30.1	K	9.5	45.8	44.5		9.3	53.0	53.1	
9.2	4.6	17.5		8.5	53.1	51.0		9.3	1 23.1	53.5		9.5	49.4	51.4		9.5	4 45.2	29.5	
9.5	9.8	53.2		8.5	59.2	21.2		9.3	2 9.6	47.7		9.5	42 17.7	21.2		8.7	45.4	5.7	

801—860				861—920				921—980				981—1040				1041—1100			
	5ᵐ	+25°			5ᵐ	+25°			5ᵐ	+25°			5ᵐ	+25°			5ᵐ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	4 58.9	9.3		9.4	25 11.2	28.9		9.5	32 59.1	22.0		9.5	39 1.0	46.7	B	9.4	47 50.3	26.2	
9.5	59.6	21.7		9.5	13.1	30.6		9.2	59.6	33.0		9.5	2.5	51.9		9.5	55.6	42.7	
9.4	5 16.2	5.6		8.4	51.9	47.4	K	9.4	59.7	13.5		9.4	12.5	54.6		9.5	48 5.5	58.1	
7.8	33.9	44.9	K	9.4	58.4	2.5		9.5	33 14.5	17.9		9.5	12.8	34.2		9.1	12.7	3.4	K
9.5	40.1	1.1		9.0	26 12.0	50.6		9.5	16.7	46.8		9.5	15.4	55.4		9.0	27.2	43.2	
8.9	6 26.9	23.0		7.7	19.1	43.7	K	9.1	17.6	42.8		9.5	19.6	28.9		9.3	39.6	21.1	
7.3	7 3.0	47.5	K	9.5	20.4	4.7		9.4	21.9	1.7		9.5	27.1	15.8		9.3	43.5	1.6	
8.4	3.2	12.7	K	8.8	36.1	46.4	K	9.5	25.0	36.2		9.5	32.8	18.0		9.3	45.5	48.9	
9.1	24.6	14.2		9.4	38.6	56.0		9.5	27.8	27.8	B	9.2	34.9	2.6		8.5	50.0	8.6	K
9.5	32.7	41.2		9.2	39.2	52.8		9.4	44.4	48.3		9.4	40 0.1	15.6		9.0	54.7	40.0	
9.5	8 22.7	26.7		9.3	40.5	51.3		9.0	52.1	39 0		7.6	8.7	35.3	K	9.2	59.2	31.4	
8.7	26.8	55.0	K	9.0	45.5	10.5		9.5	52.7	24.7		9.5	12.3	2.1		5.2	49 0.4	55.8	L
9.5	9 0.7	2.6		9.2	48.9	27.9		9.5	54.2	13.6		9.3	24.5	12.8		8.3	9.9	32.9	L
9.5	17.4	17.3		9.4	58.1	35.6		8.2	34 6.1	17.6	S	9.5	29.4	27.1		9.5	19.1	56.8	
9.5	23.2	21.9		9.0	27 0.2	55.1	K	9.2	13.7	45.8	R	9.2	38.2	38.9		9.0	37.0	16.4	K
9.0	10 48.9	1.7	B	9.5	13.1	18.1		9.5	20.7	48.7		9.5	48.6	26.3		9.5	40.2	22.6	
9.5	11 4.6	54.4		9.4	20.1	56.1		9.5	22.0	6.5		9.3	41 2.0	20.7	B	9.0	50.5	14.2	K
7.9	22.8	0.6	K	8.5	31.6	29.7		9.4	27.5	6.7		9.5	4.7	47.7		7.3	54.1	45.3	L
9.5	50.7	51.5		6.6	31.7	50.7	K	9.0	30.4	57.4		9.3	18.4	10.4		9.5	50 6.8	39.8	
8.5	57 5	34.0	K	9.5	37.1	23.3		8.0	34.1	13.1	L	9.5	30.1	27.2		9.1	15.5	2.6	R
9.5	13 13.7	2.7		8.9	41.0	3.5		6.8	41.4	22.2	K	9.5	36.9	9.9		9.5	16.6	19.9	
9.5	15.7	27.4		9.5	48.7	43.9		9.4	52.9	2.8		9.3	38.8	10.7		9.5	34.4	54.4	
9.5	15 11.4	33.8		9.2	50.2	54.6	K	8.9	35 2.3	7.4		9.5	39.6	22.0		9.5	40.3	4.6	
9.5	25.7	4.7		9.5	52.9	56.8		9.5	10.0	31.4		9.5	42 4.7	21.7		9.1	52.0	22.2	K
9.5	30.7	49.4		9.5	28 13.2	31.4		9.2	10.6	50.2		8.9	6.1	10.6	K	8.8	57.7	4.5	
9.5	17 3.4	13.1		9.2	31.0	58.8		9.2	12.0	18.3	K	9.5	30.4	15.5		9.5	51 10.3	5.7	
9.5	3.4	41.3		9.2	45.0	42.8		9.3	21.5	8.2		9.5	44.9	1.3		8.7	16.8	10.6	K
8.0	4.9	37.8	K	9.0	52.9	55.1		9.5	24.6	51.6		9.2	55.7	37.9	K	9.5	23.1	16.4	
9.4	7.0	7.4		9.5	54.3	43.8		9.5	32.1	56.0		9.3	43 1.1	3.8		8.5	23.2	54.7	K
8.5	46.1	9.4	K	9.0	58.1	30.6	R	9.4	37.5	37.0		9.4	2.0	15.4		9.5	35.3	52.1	
8.5	51.1	37.6	K	9.5	29 25.0	27.9		9.5	40.1	55.0		9.3	24.5	45.3		9.2	36.2	21.2	K
9.5	18 29.1	49.0		9.5	46.5	37.8		9.0	43.0	25.1		9.2	38.1	41.8		9.4	39.9	2.1	
9.5	30.3	2.6		9.5	50.1	46.7		8.1	52.4	41.9		8.9	40.3	53.4	K	9.0	52 4.5	53.1	K
9.4	35.8	21.1		9.5	50.8	0.3		9.5	55.7	13.2		8.8	41.0	15.1	K	9.4	8.8	4.7	
9.5	58.1	15.1		9.5	30 5.0	51.9		9.5	36 10.5	52.5		9.3	44 0.1	43.3		9.0	12.3	22.5	R
9.5	19 1.4	53.6		9.4	6.1	30.7		9.5	15.1	10.0		9.3	8.5	49.8		9.5	15.1	36.3	
9.5	55.0	13.1		9.5	10.5	12.9		9.4	20.2	26.8		9.2	10.4	0.2		9.4	32.0	31.1	
9.3	56.3	47.9		9.4	15.0	28.0		8.5	34.9	40.3		9.5	12.1	47.0		9.5	35.5	4.8	
5.5	20 20.9	1.7	K	9.4	25.2	24.5		9.2	36.1	2.2		8.5	32.5	42.3	K	8.9	37.0	28.5	K
9.5	41.0	12.8		9.3	29.2	20.5		9.5	36.7	23.1		7.3	34.4	2.2	K	9.4	47.0	35.4	B
9.1	21 22.5	4.2		8.7	35.0	13.8		8.0	36.9	3.0	K	8.2	40.0	33.2	K	9.5	51.1	37.4	
8.7	28.1	55.1	K	5.7	46.1	48.8	K	9.5	40.0	11.7		9.0	41.6	58.5		9.3	53 5.6	47.1	
8.1	31.3	13.1	K	9.2	48.6	30.6		7.7	56.1	51.2	S	9.3	58.9	25.0		9.4	10.0	11.5	
9.5	22 4.2	4.5		9.4	53.9	50.9	B	9.3	59.2	54.6		8.6	45 4.7	30.4	K	9.3	10.0	50.8	
9.5	7.5	44.2		9.4	31 15.7	9.6		9.5	37 11.1	48.2		9.5	7.0	59.1	B	9.5	12.2	59.3	
9.4	26.4	11.9		9.5	16.8	43.7		8.8	14.6	14.3	K	9.4	53.2	47.7		9.5	30.3	8.0	
9.4	46.1	38.9		8.5	20.4	0.1	K	8.4	18.5	38.0	L	9.3	57.1	3.7	B	9.3	45.7	45.7	
9.4	23 2.7	45.1		9.3	27.0	56.4		9.3	18.6	43.7		9.1	46 24.0	53.4		8.7	52.8	39.8	K
9.2	25.1	14.2		9.0	32.1	54.9		9.5	25.1	23.0		9.5	36.1	46.2		8.0	53.0	53.1	K
9.4	33.5	58.7		8.5	49.7	10.9	K	8.7	26.2	28.7	K	9.4	47.4	8.2		9.5	54 0.5	4.4	
9.1	59.0	54.1		9.4	54.6	47.7		9.4	30.3	32.7	B	9.1	48.6	26.2		9.1	11.4	42.2	
8.0	59.1	47.7	L	9.5	55.5	7.8		8.7	35.7	12.6	K	9.5	58.2	31.4		9.3	19.3	39.2	R
9.5	24 12.5	1.1		9.5	32 5.3	44.7		9.5	37.3	28.9	B	9.3	47 0.1	27.9		9.5	25.2	19.3	
9.5	22.5	56.2		9.5	10.0	1.5		9.5	45.2	42.7		7.9	16.4	18.0	K	9.3	25.9	42.5	
9.4	22.9	4.8		9.5	26.2	25.6		8.5	38 8.5	47.6	K	9.5	25.1	55.1		9.1	30.0	32.1	R
9.5	33.7	36.7		9.5	29.5	7.2		9.5	16.9	56.1		8.5	28.1	28.8	K	9.1	55.5	6.7	
9.0	34.2	22.1		9.5	34.7	43.7		9.0	19.0	54.0	K	9.5	30.0	9.7		9.0	56.0	4.5	R
9.3	25 2.1	30.6		8.4	41.1	25.9	K	6.6	37.4	30.4	K	8.8	34.6	0.7	K	9.5	55 3.1	16.3	
9.5	2.7	42.8		9.3	43.0	24.2		9.1	42.3	55.1	K	9.5	45.8	17.3		8.5	10.9	5.7	K
9.5	9.1	38.8		9.0	53.0	57.7	K	9.3	52.5	34.1		9.3	48.7	8.4		6.9	15.3	27.0	K

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ—6ᵘ	+25°			6ᵘ	+25°			6ᵘ	+25°			6ᵘ	+25°			6ᵘ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	55 22.6	47.7		9.4	4 5.3	31.5	B	9.5	11 23.7	54.7		9.2	19 15.2	30.4		9.2	28 23.5	9.0	
9.5	25.2	38.1		9.5	11.5	5.7		9.0	35.3	14.7	B	9.2	27.6	25.0		9.0	25.4	19.8	
9.5	26.7	11.3		8.4	24.7	23.0	K	7.9	36.4	40.2	K	8.8	39.8	47.4	K	9.5	26.0	55.1	
9.5	38.2	57.8		8.9	29.0	42.9		9.5	37.8	50.9	B	9.5	40.7	24.4		9.3	34.9	35.8	
8.5	45.4	10.9	K	9.2	37.4	52.2		7.2	39.5	14.8	K	9.5	43.3	16.9		9.5	38.5	55.3	
9.5	56 2.6	51.6	B	9.2	39.2	13.8		8.7	54.9	45.8	K	8.8	46.5	12.2	B	9.5	54.3	22.8	
9.5	3.4	21.8	B	9.5	55.3	53.9		9.5	12 3.1	25.5		8.0	46.7	42.5	K	9.4	58.7	27.4	
8.0	7.3	48.2	K	9.5	56.4	33.3		9.4	15.3	36.3	B	9.5	20 9.2	55.1		9.4	59.6	57.7	
8.3	8.5	57.5	R	9.5	59.5	50.9		9.5	18.8	10.9		8.7	15.0	8.2	K	9.5	29 3.0	14.2	B
9.3	13.0	4.7		9.5	5 26.9	25.5		9.5	34.4	2.9		9.4	17.3	53.9		9.5	6.2	11.4	
9.4	39.4	11.4		9.5	35.4	15.2		9.3	35.1	56.1		9.2	22.3	29.3		9.5	8.5	14.6	
9.3	41.4	52.6		9.5	39.1	25.5		8.8	42.5	4.0	K	8.3	23.7	24.0	L	9.5	19.5	29.8	
9.5	50.4	9.9		9.5	43.0	20.6		9.5	52.7	14.6		9.5	26.1	37.3		8.6	24.3	52.5	K
9.5	57 1.2	26.8		8.2	51.3	16.8	K	9.5	52.9	45.7		9.3	26.7	48.4		9.4	34.6	43.6	
9.3	4.5	17.6	K	9.5	6 6.0	14.7		9.3	13 10.6	2.3		9.5	45.5	2.0		9.4	44.6	28.3	
9.5	7.2	22.0	B	9.2	10.3	7.1		8.5	21.0	38.4	K	9.5	48.7	16.2		9.5	55.4	48.0	B
9.5	26.5	50.5		9.1	11.1	30.2	B	9.2	21.9	9.0	K	9.0	52.8	31.3	B	9.1	30 2.4	40.6	K
9.5	28.0	53.6		9.4	16.0	50.7		9.1	24.2	17.7		9.5	21 18.9	49.3		9.4	6.5	56.6	
9.5	35.8	28.0		9.4	19.0	29.6		9.5	36.1	58.2		8.7	25.0	14.5	K	9.4	9.9	56.0	
9.3	49.3	33.6	R	7.6	28.0	22.2	K	9.5	52.0	57.5		9.5	30.0	50.1		9.3	24.4	14.8	
8.7	58 25.9	31.9	K	9.5	41.8	34.9		9.5	14 9.4	9.0		9.0	32.6	46.6	L	8.5	26.6	39.0	K
9.2	41.5	50.4		9.5	46.4	32.9		9.5	11.8	23.2		8.5	41.2	58.5	K	8.5	31.2	12.3	
9.5	55.3	38.4		9.5	46.6	39.3		9.5	12.5	26.4		9.5	52.2	53.5		8.7	33.3	11.3	
8.0	59 1.8	56.3	K	9.4	47.4	29.9	B	9.3	23.6	10.0	B	9.0	58.2	30.6	K	8.7	36.7	37.7	K
8.0	2.0	27.8	K	9.4	54.0	36.3	B	9.3	24.3	35.3		9.3	22 24.8	53.0		9.0	38.2	7.3	
9.5	13.6	47.4		9.3	7 19.6	13.2		9.5	43.1	6.9		9.5	33.2	42.9		9.3	42.7	42.9	
9.4	14.6	1.9		9.5	38.0	46.4	B	9.5	43.4	40.2		9.4	36.9	13.1		9.5	52.3	10.5	
8.2	29.9	58.7	K	9.2	42.4	15.6	K	9.5	54.5	51.7		9.0	48.0	5.3		9.5	53.3	31.5	
9.3	30.4	12.4		9.4	51.2	55.0		8.7	55.1	19.1	K	9.0	48.5	0.5		9.4	55.2	21.9	
8.6	40.8	40.3	B	9.5	53.1	35.2		9.5	15 5.2	5.0		9.3	23 18.7	53.9		9.5	59.8	16.0	
7.6	49.2	39.7	L	8.4	57.5	32.3	K	8.4	5.3	29.2	K	9.5	38.6	50.4		8.7	31 6.7	27.1	
9.5	0 4.2	40.8	B	9.5	8 16.2	17.5		9.4	6.6	47.2		9.5	44.3	6.4		8.5	7.7	17.4	R
8.1	5.0	31.4	R	9.5	16.2	5.4		9.5	9.6	12.9		9.5	51.4	1.1		9.5	19.1	52.5	
9.4	9.9	12.4		9.5	23.9	59.9		9.4	21.2	54.6		8.0	52.8	56.8		9.4	25.6	54.4	
9.3	11.6	0.3		9.5	27.1	5.4		6.5	48.6	6.9	K	9.1	57.7	25.6	B	9.5	25.7	52.1	
9.5	24.4	59.8		9.5	34.0	20.3		9.5	51.5	34.5	B	9.5	24 9.8	37.4		9.2	26.5	20.4	B
9.5	41.2	4.1		9.5	34.8	10.4		9.5	54.5	33.6		8.3	12.8	22.9	B	9.2	30.3	50.5	B
9.5	1 14.7	2.5		9.5	49.8	38.8		9.5	16 5.3	4.7		8.8	14.3	23.1	B	8.8	31.3	12.3	
9.3	15.1	4.1	B	9.4	9 11.0	45.0	B	9.4	5.6	58.2		9.5	47.4	1.9		9.3	37.8	15.8	
9.5	15.3	33.9		9.3	12.3	41.2		9.4	15.6	40.5	B	9.4	56.9	25.1		9.4	38.8	48.4	
9.4	19.3	3.0		9.5	13.8	8.1		9.5	15.9	44.5		9.3	25 28.8	46.8		9.5	44.5	46.5	
9.5	19.8	31.2	B	9.5	16.1	19.1		9.5	18.0	45.0		9.1	33.9	15.3		8.0	32 3.7	27.4	L
9.5	48.3	22.2		9.5	21.8	22.8		9.5	18.4	52.5		9.5	37.2	19.9		9.5	24.9	25.7	
9.5	56.0	36.8		9.0	29.3	57.3	K	9.5	41.0	20.8		9.2	51.9	5.1		9.3	26.4	20.5	
9.1	2 1.5	50.1		9.0	31.5	56.1	K	9.4	41.5	20.1		9.1	26 0.3	52.5		9.2	46.5	50.3	
9.5	4.6	24.1		9.5	33.5	10.2		9.3	42.8	9.7		7.6	7.6	1.5	K	9.5	51.4	35.7	
9.0	8.4	58.0	R	8.0	46.7	24.0	L	9.3	49.7	36.8		9.5	25.0	13.2		9.4	59.1	18.2	
9.2	8.5	35.5		8.3	48.9	34.3	L	9.3	50.8	48.0		9.5	36.4	1.4		9.3	33 0.8	5.9	
9.3	13.5	4.4		9.3	49.2	29.9		9.0	52.0	32.4		9.5	38.2	32.9		9.3	2.9	36.2	B
9.3	15.0	32.0		9.5	53.5	57.3		9.3	17 6.6	25.7	K	9.5	40.1	12.9		9.1	3.3	57.2	
9.0	27 9	34.8		9 5	10 25.7	5.9		8.9	8.7	39.3		9.5	46.3	12.2		9.5	14.7	45.2	
9.1	29.4	13.3		9.1	26.8	58.2		8.5	9.3	34.8	K	9.3	47.4	20.6		7.8	14.9	35.8	K
8.1	38.6	2.2		8.7	27.0	44.7	K	8.9	15.2	40.5		9.1	27 18.9	4.5		8.8	21.5	29.9	K
9.4	46.9	1.7		9.4	52.0	7.4		8.5	16.7	38.3	B	9.5	24.1	12.7		9.1	30.5	50.4	
9.2	49.4	9.6		7.8	56.3	4.2	S	8.7	56.4	3.4		9.4	34.0	3.6		9.5	52.9	35.4	
9.3	50.0	6.4		9.5	59.5	37.5		8.7	18 4.6	1.4		9.4	34.5	19.7		9.5	34 9.7	37.9	
9.5	51.1	26.6		9.5	11 1.9	15.0		9.4	11.8	47.1		9.3	37.8	50.3		8.5	25.1	53.7	K
9.2	3 16.3	15.8		9.3	3.7	48.5		9.1	19.4	27.3	K	9.3	48.3	44.9	B	9.5	30.3	31.5	
8.5	43.7	43.4	R	9.2	19.8	22.6		9.5	24.2	13.0		9.5	50.9	25.1		9.5	34.6	2.5	
9.1	53.8	40.4	R	9.5	23.2	29.3		9.5	39.6	25.2		9.5	28 4.2	0.3		9.5	35.4	11.5	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵐ	+25°			6ᵐ	+25°			6ᵐ	+25°			6ᵐ—7ᵐ	+25°			7ᵐ	+25°	
m				m				m				m				m			
9.2	34′ 45.0	32.4		9.5	42′ 6.9	25.0		9.4	50′ 1.1	23.4		9.5	59′ 9.8	38.4		9.0	11′ 46.4	15.3	
9.3	49.4	40.6		9.0	16.1	43.8		8.8	10.7	1.8		9.5	14.2	45.8		9.5	12 4.0	30.5	
9.5	53.3	23.1		9.5	28.5	49.7		8.7	18.7	1.5	K	9.5	23.0	47.1		9.2	7.3	15.4	
9.4	56.1	22.4		9.4	48.1	54.4	B	8.2	27.9	25.4	K	8.7	39.0	12.2	K	8.5	9.0	56.6	
9.0	56.2	33.0	K	8.9	48.1	12.9	K	8.7	28.4	25.6	K	9.1	41.0	12.1	K	9.0	16.6	18.4	B
3.2	35 0.8	16.0	L	9.5	49.7	58.1		9.5	31.5	40.2		9.3	42.3	52.2	B	9.4	19.1	3.5	B
9.0	9.0	16.0		9.2	55.0	51.4	B	9.5	42.6	33.5		9.5	56.4	25.7		9.2	29.4	45.1	
9.0	22.4	41.2	K	9.1	55.1	22.8		9.5	51 13.9	55.7		9.5	0 2.5	25.0		9.3	35.0	12.6	
9.5	41.1	58.9		7.0	43 1.5	50.0	K	9.5	21.3	9.8		9.5	24.5	54.7		8.5	40.0	28.7	
9.5	56.9	35.7		9.2	10.8	6.0		9.5	21.7	38.6		8.5	24.9	28.6	K	9.0	52.7	39.0	
9.5	36 8.4	40.6		9.4	11.1	38.7		9.4	22.9	37.6	B	9.1	28.2	1.4	B	9.0	56.2	10.3	
9.5	15.8	26.8		9.1	11.5	29.1		9.4	25.1	57.3		9.3	34.5	48.6	B	9.0	57.8	39.7	
9.5	17.8	26.1		9.2	23.7	58.7		9.4	39.1	53.0		9.5	36.6	10.2		9.3	59.5	10.0	
9.5	19.2	22.6		9.4	33.0	45.4		9.5	44.0	43.0		7.0	41.8	57.8	K	9.0	13 39.7	11.5	K
9.5	29.2	1.6		9.5	44.7	58.5		9.5	51.2	10.3		7.7	48.1	57.6	K	9.1	14 11.7	4.0	B
9.1	40.0	55.0		8.6	45.5	50.6		9.5	52 6.4	24.8		8.5	52.8	51.6	L	9.4	14.6	49.4	
9.3	47.3	51.8		9.5	46.6	20.5		9.5	16.5	15.2		9.0	1 48.9	15.5	K	8.9	25.8	39.1	
9.5	37 13.0	23.8		8.5	50.5	8.9	K	9.5	31.6	41.6		8.5	2 9.0	33.0	K	9.4	29.1	53.4	B
9.5	17.9	25.3		7.5	56.5	55.5	K	9.5	42.3	5.8		9.1	20.5	25.7		8.8	30.6	47.2	
9.4	20.2	22.6		9.2	44 1.6	35.5		8.3	46.9	46.3		9.3	31.5	54.4		5.0	38.0	19.5	R
9.5	23.0	54.7		9.5	3.8	15.4		9.5	53 7.0	16.2		9.5	47.1	37.3		9.5	15 18.6	54.1	
9.3	36.5	49.5	B	7.5	10.6	28.3	K	7.0	12.3	37.6	B	9.3	48.2	0.4	B	9.2	22.3	1.9	
9.5	50.0	50.4		9.5	28.0	50.2		9.5	13.9	42.2		9.0	59.5	21.4		9.5	32.2	6.0	
9.4	58.2	1.1		9.5	34.9	58.7		9.1	26.3	24.9		9.5	3 17.7	21.1		9.2	32.7	55.9	K
9.5	38 6.9	47.8		9.5	41.4	40.3		7.5	27.6	32.6	K	9.3	29.3	4.7		9.2	48.2	39.7	
9.3	9.5	24.6		9.5	45 14.4	4.6		9.5	29.8	4.1		9.0	39.3	46.0	B	9.5	16 21.6	3.4	
9.5	20.1	24.9		9.3	20.0	40.2		9.4	52.0	5.8		9.4	41.5	50.5		9.5	25.8	44.5	
9.4	22.7	16.9		9.5	20.2	11.8		9.5	54 0.6	4.5		8.4	47.4	46.7	K	9.3	41.7	31.5	
9.4	27.9	46.0		9.5	22.3	25.1		9.5	10.0	47.9		7.2	53.8	59.1	K	8.6	50.8	16.0	K
9.5	35.0	5.4		9.5	40.6	28.0		9.5	14.7	27.1		9.5	4 24.3	14.0		9.3	55.6	6.9	
9.3	39.5	21.1	B	9.5	48.7	3.0		8.3	20.6	30.9	K	9.3	35.0	1.6		9.5	17 47.8	15.7	
9.4	40.4	18.0		9.0	46 6.2	42.8		9.1	24.5	6.5	K	9.4	47.5	14.0	B	9.5	49.6	51.3	
8.8	40.4	51.5		9.5	7.0	3.7		8.3	33.2	32.0	K	8.3	5 5.1	15.3	K	9.5	18 10.9	25.7	
9.3	54.3	44.5		9.4	19.3	5.2	B	9.1	34.8	3.3	B	9.5	11.2	40.6	B	9.4	20.2	48.1	
9.0	39 2.9	48.3	B	9.5	20.6	18.1		9.5	37.9	55.1		9.5	27.8	55.3		9.3	19 2.2	1.3	
9.5	18.3	21.4		6.2	24.2	32.6	R	8.2	39.0	18.1	L	9.5	44.6	36.3		9.4	6.8	20.0	
9.4	20.7	37.9		9.2	55.0	24.7		8.5	58.0	37.2	K	9.5	46.8	16.6		8.2	12.5	19.0	B
9.5	33.8	34.3		9.4	56.4	32.6		8.5	55 1.0	44.7		6.3	49.9	8.6	K	9.2	12.6	41.1	
9.1	35.2	22.3		8.8	47 12.0	45.2		9.2	8.5	59.4		9.5	6 6.2	18.6	B	9.5	24.6	4.8	
9.5	52.1	12.9		9.5	19.0	3.5		9.5	28.5	20.4		9.0	14.6	32.6		9.1	39.7	15.7	
9.5	58.6	18.1		9.5	19.7	58.6		9.5	30.5	55.8		9.3	20.6	18.8	B	9.5	44.3	25.1	
9.5	40 1.4	30.0		7.5	25.2	11.2	K	9.5	30.5	48.9		9.0	24.0	32.6	K	9.2	49.2	33.6	
9.5	8.0	55.2		9.4	30.6	43.7		9.4	34.0	35.4		9.4	56.9	3.0		8.4	20 2.8	33.2	
9.5	28.0	32.0		9.2	46.2	53.4		9.5	42.6	47.1		9.5	7 37.3	46.3		9.5	21.9	49.5	
9.5	37.3	35.8	B	8.5	48.2	43.0		9.4	50.0	7.1		8.9	38.2	8.0		9.5	54.3	27.1	
7.2	46.6	38.7	K	9.4	48.3	10.4		9.3	56.6	43.0	B	9.5	8 8.4	40.2		9.5	55.6	13.1	
9.4	49.5	50.5		8.6	48 0.3	0.1	K	9.2	56 12.5	40.5		9.4	43.7	51.9	B	9.5	21 24.3	30.0	
9.5	59.6	23.3		9.5	3.5	30.5		9.5	23.2	33.0		9.1	51.9	35.4		9.5	25.6	22.5	
9.4	41 0.0	59.6		7.5	9.6	8.3	K	9.5	29.7	1.3	B	9.3	53.8	19.9		8.3	33.0	44.3	K
9.5	0.3	52.4		8.8	14.9	46.1		8.5	57 11.4	42.3		9.5	55.4	50.9		8.8	22 5.0	31.8	
9.5	0.4	30.7		9.0	15.5	18.9		7.0	18.0	5.1	K	9.5	9 4.6	56.0		8.6	9.5	27.6	
9.3	1.9	4.8		9.4	38.6	47.8	B	9.4	43.5	30.2		9.5	21.7	3.4		9.2	32.2	57.3	
9.3	5.2	59.0	B	9.5	41.6	7.6		9.5	46.0	5.8		9.1	38.0	32.6		9.5	38.5	5.4	
9.5	11.1	18.9		9.4	55.1	22.9		9.5	48.8	40.5		9.0	40.7	55.3	K	9.4	38.8	42.0	
9.4	18.2	12.2		9.3	49 0.5	50.3		9.5	58 13.9	0.1		9.4	50.5	41.8		9.3	39.1	34.4	B
9.5	42.9	45.8		9.5	4.9	46.1		9.5	20.8	52.3		8.6	49.8	50.0	K	9.3	46.4	50.3	B
9.5	44.6	38.4		7.8	15.4	9.6	K	9.5	31.0	25.4		9.5	55.0	57.4		9.3	47.7	40.0	B
8.6	49.9	4.8		9.5	30.0	33.9		9.5	37.9	7.0		9.3	10 17.9	9.8	B	9.5	23 34.8	39.5	
8.7	50.9	25.5	K	7.8	34.7	6.7	K	8.9	49.9	39.5	K	9.3	11 4.8	57.8		9.4	35.8	42.7	B
7.2	42 3.0	55.4	K	8.5	56.4	30.5	K	9.5	59 5.1	4.0		9.4	15.4	49.4		9.5	58.2	16.6	

7ᵘ—8ᵘ **+25°**

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ᵘ	+25°			7ᵘ	+25°			7ᵘ—8ᵘ	+25°			8ᵘ	+25°			8ᵘ	+25°	
m		′		m		′		m		′		m		′		m		′	
9.3	24 14.8	42.1		9.3	38 28.3	6.3		8.9	53 34.6	16.3	B	9.3	6 13.1	56.0		9.4	23 44.0	57.9	
9.5	23.9	3.1		9.0	41.4	7.7	B	9.5	38.3	42.5		9.3	16.3	16.3		8.5	53.3	33.2	K
9.5	39.7	32.9		8.8	44.0	48.5		9.1	41.2	37.4		9.5	30.1	7.0		9.5	56.4	27.3	
8.7	50.5	42.2	K	9.0	39 8.8	27.0		9.5	48.3	3.3		9.4	43.3	35.0		8.9	24 12.2	49.0	
9.4	25 7.6	3.8		9.5	23.5	43.9		8.5	59.1	11.9	K	9.5	7 5.0	0.3		9.5	41.4	13.2	
9.0	13.6	9.3	K	9.4	40 17.3	52.6		8.5	54 9.6	23.6	K	9.2	9.2	33.8	B	9.5	43.9	47.3	
9.3	34.3	33.1		9.5	19.6	9.5		9.3	20.7	3.6		9.3	11.3	45.3		9.4	25 9.2	56.2	
9.0	50.3	8.4	K	8.5	43.2	26.8		9.4	21.8	47.8	B	8.7	36.7	8.7	K	9.3	9.9	15.3	
8.0	59.7	14.6	K	9.5	41 9.8	46.7		9.5	24.1	37.9	B	9.5	8 2.5	57.3		9.3	16.8	37.0	
9.1	26 10.3	55.4		9.5	28.0	45.6		9.5	28.1	41.7		9.1	30.1	13.9		8.0	29.2	45.4	K
8.5	25.1	52.6	B	9.5	47.2	12.2		9.5	35.5	55.1	B	8.8	36.8	6.8	K	8.7	33.1	5.4	K
9.5	30.5	31.4		9.5	52.8	49.4		9.4	39.4	45.8		7.3	55.3	16.5	K	9.3	50.1	1.1	K
8.2	27 7.2	13.2	K	8.2	42 10.7	27.7	K	9.5	40.9	56.3		8.2	9 2.6	53.5	K	9.5	26 10.0	33.9	
9.2	30.9	35.3	K	9.5	11.5	50.5		9.5	54.8	47.1		9.3	9.7	42.5		9.4	27 5.3	4.7	
9.4	28 0.2	12.2	B	9.3	28.7	18.8		9.5	55 2.3	7.1		9.5	25.2	23.5		9.4	10.6	14.3	
8.5	6.8	18.7		9.5	43.5	56.5		9.1	7.4	3.8		8.9	33.9	51.9	K	9.4	12.7	55.7	
9.3	16.8	45.3	B	9.5	59.0	58.1		9.5	18.2	29.4		9.0	10 37.6	13.2		9.5	39.9	41.4	
9.3	26.8	22.4	B	8.0	43 2.5	11.9	K	9.5	41.0	37.3		8.3	51.1	25.6	L	9.0	28 31.5	34.9	K
9.4	26.9	3.7		9.0	2.5	14.0	K	8.9	56 42.3	27.1		8.3	11 11.2	11.8	L	8.8	33.8	45.9	K
9.3	29.9	51.1		9.4	10.8	23.8	B	9.3	59.5	6.3		9.5	29.1	2.5		9.5	40.6	3.8	
9.5	56.8	25.0		9.2	17.8	29.6		9.1	57 0.0	3.6		8.2	35.5	57.0	K	9.1	29 16.9	10.7	
9.5	59.3	5.9		9.5	27.7	11.9		9.2	6.2	35.2		9.5	49.4	6.7		9.5	51.0	2.0	
9.5	29 28.1	19.1		9.0	44 35.2	50.1		9.3	6.3	46.6		7.5	12 1.6	47.3	K	9.5	30 5.6	8.4	
9.5	28.8	38.5	B	9.1	47.5	40.8		8.7	21.5	53.4	K	9.3	29.0	16.7		9.4	13.7	10.9	B
9.1	33.5	0.2	K	9.1	45 2.9	5.7		9.5	34.4	5.5		9.0	34.5	11.8		8.9	3118	23.8	K
9.5	34.8	27.2		9.0	6.3	9.5		9.0	44.2	23.2		9.0	37.5	20.4	K	8.6	34.2	27.6	K
8.9	35.5	22.1	K	9.4	23.8	56.3		9.5	56.5	5.1	B	9.5	57.1	50.1		9.4	37.0	15.9	
9.3	30 6.7	32.5		8.8	49.2	34.0		9.2	58 9.8	55.9		9.5	13 50.0	52.5		9.4	44.2	16.9	
9.4	28.5	7.7		9.5	46 3.2	51.5		9.5	23.7	53.2		9.5	14 21.3	3.6		8.5	31 1.9	7.6	K
9.5	41.7	8.0		9.3	19.0	50.1		9.4	52.6	5.1		9.1	52.1	37.7		9.5	33.2	20.4	
9.5	31 16.8	21.6		9.1	19.3	33.7		9.1	57.2	8.3		9.1	56.5	32.5		9.5	49.5	32.5	
9.5	25.5	46.3		9.5	42.2	7.3		9.5	59 17.2	18.8		8.8	15 7.4	16.6		9.5	33 3.1	58.4	
9.4	37.2	30.8		9.5	47 12.4	9.9		8.7	22.6	7.8		9.3	22.6	20.5		8.9	30.2	31.1	K
9.5	38.6	57.0		7.5	17.0	2.7	K	8.1	35.2	57.8	K	9.4	32.6	51.1		8.7	48.7	33.5	K
9.3	32 0.4	10.9		9.5	48.3	4.0		9.2	38.7	7.3		9.1	45.9	55.0		9.5	34 28.5	47.6	
9.5	7.1	6.4		9.3	48 14.4	1.4		9.5	57.2	31.0		8.8	16 3.3	9.8		9.5	43.3	32.8	
9.4	12.2	45.6		9.1	30.0	20.5		9.3	0 5.0	43.5		9.1	14.1	41.9		8.9	35 11.2	18.6	K
8.0	16.2	18.4	K	9.2	30.3	52.4		9.1	11.2	3.2		9.5	17 2.8	39.0		9.5	25.7	24.9	
9.5	33 23.0	55.9		9.5	49 18.2	9.6		9.5	34.3	37.2		9.2	56.7	56.0		9.3	32.6	38.6	
9.4	25.6	49.1	B	9.4	24.5	46.7		8.0	43.0	13.4	K	6.5	18 2.0	0.7	K	9.5	41.2	35.9	
9.4	33.0	24.0		9.4	34.1	30.8	B	9.1	43.5	0.6	B	9.1	33.1	37.3		9.0	52.2	19.4	K
9.5	46.5	2.5		9.4	50 5.7	12.5		9.3	50.3	1.5	B	9.5	34.7	25.0	B	8.9	37 9.6	17.3	
9.5	34 9.8	27.8		9.3	21.8	12.5		9.5	52.0	6.5		9.3	19 6.2	44.2		7.8	29.2	53.5	K
9.4	20.6	35.5	B	9.5	31.0	50.1		8.0	58.8	58.7	K	9.3	8.0	54.5		9.2	34.2	50.1	K
9.5	28.7	35.8	B	8.5	43.3	19.1		6.1	1 44.5	56.2	K	9.5	18.6	43.9		9.5	38 26.7	33.9	
9.2	40.2	56.3	K	8.8	51 12.2	23.9		9.2	52.3	8.2	B	9.5	32.1	20.8		9.4	29.3	28.0	
9.3	53.6	26.7		9.4	32.7	9.5		9.4	59.2	5.7		8.1	52.0	1.3	K	9.5	50.0	20.4	
9.5	55.3	7.5		9.4	34.5	39.3		9.2	2 23.8	28.0		9.4	20 24.5	3.7		9.4	39 40.6	23.5	B
9.3	58.2	9.1		9.5	38.3	1.9		9.3	37.0	33.7	B	9.3	28.4	30.5		9.3	57.8	36.7	
9.1	35 47.8	51.7		8.0	40.8	25.3	K	9.2	40.4	31.2		9.4	29.5	34.0		9.5	59.0	26.5	
8.8	36 44.7	4.4		8.9	47.0	37.0	K	9.0	3 8.1	26.7	K	9.1	30.7	39.7		9.5	40 1.6	22.8	
9.4	37 4.8	31.8		6.5	52 10.6	46.4	K	8.7	22.3	37.0	K	9.5	57.1	58.5		9.5	20.2	47.8	
9.2	9.0	26.0		9.3	10.9	23.1	B	9.5	51.6	15.6		9.5	21 17.2	6.0		9.5	26.5	52.0	
9.3	9.5	59.5		9.4	11.0	12.9		9.5	4 20.1	23.9		9.0	22.2	13.5	K	9.5	28.4	1.2	
9.5	14.6	4.4		9.5	46.2	58.3		9.0	20.3	45.3	K	9.4	22 8.0	37.6		9.5	37.6	42.4	
9.5	23.2	16.7		7.0	59.0	28.8	K	9.3	21.9	37.4		9.1	44.2	55.8		9.5	48.0	39.0	
9.5	55.3	46.0		9.4	53 10.2	55.3		9.3	44.6	45.0		8.8	50.6	28.0		8.8	41 43.3	7.1	
9.5	58.7	15.7		8.5	18.8	42.5		8.8	54.5	8.7	K	9.3	23 24.2	43.5		9.3	42 27.7	23.2	
9.0	38 22.2	12.2		8.5	22.0	20.2	K	9.4	5 27.0	0.9		9.5	25.6	51.1		9.4	34.5	34.0	
9.4	27.0	28.1		9.2	31.1	15.7	K	8.4	6 3.6	10.0		9.4	32.3	2.1		8.8	43 5.0	45.9	K

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	8ᵘ—9ᵘ	+25°			9ᵘ	+25°			9ᵘ	+25°			9ᵘ—10ᵘ	+25°			10ᵘ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	43 5.2	57.9		9.4	3 37.2	59.7		9.0	26 42.9	32.8		9.1	47 50.6	13.7		8.7	14 36.1	29.8	L
9.5	7.3	30.1		8.1	5 13.4	51.0	K	9.5	56.8	9.1		8.6	48 7.7	19.6		9.0	44.0	47.5	B
8.3	37.1	41.4	K	8.3	41.8	53.9	K	9.5	27 21.9	13.2		8.6	9.2	24.4		8.9	15 13.0	44.5	L
9.3	59.1	58.0		9.2	44.3	17.3		9.1	29 4.8	59.6		8.5	31.0	44.6	B	9.5	34.9	56.9	
9.4	44 2.1	59.7		7.0	6 0.6	36.9	L	9.5	12.9	41.7		8.4	41.2	39.3	K	9.3	56.3	26.7	
9.3	2.4	49.6		9.4	14.8	57.8		9.0	15.0	2.9	K	8.0	49 5.9	29.3	L	9.4	16 50.9	7.8	
9.2	30.0	26.7		9.5	36.9	10.8		6.5	31.6	19.7	K	9.5	13.3	53.1		8.0	59.0	20.8	K
9.2	31.6	36.5		9.5	7 23.7	56.7		8.9	50.6	49.7		9.5	18.2	43.7		8.8	17 37.8	56.6	K
9.0	46 18.9	34.9		8.9	27.1	7.3		9.2	51.7	8.4		8.3	34.8	18.2	L	7.2	18 13.3	27.7	K
9.5	47.8	53.4	B	9.4	43.9	21.8		8.9	30 37.2	0.0	B	8.5	50 44.7	5.9		9.1	25.3	48.6	
9.1	47 18.1	37.0	B	9.5	56.3	59.3		9.3	45.2	5.5		7.5	51 53.7	14.8	K	9.5	34.7	58.2	
9.2	31.1	31.0		9.5	8 15.8	59.1		9.5	31 4.3	9.9		9.5	52 39.5	22.4		9.3	41.0	48.6	
7.0	43.2	0.8	K	8.5	18.9	14.4	K	9.3	29.4	33.8		9.5	53 41.0	15.1		9.0	52.3	48.7	
9.0	52.8	56.9		9.5	21.0	23.2		8.0	32 4.9	40.7	K	9.4	44.1	9.9	B	7.7	54.2	40.4	K
8.9	48 15.1	32.8	L	9.4	9 41.8	52.5		9.5	27.7	53.6		8.8	54 10.7	58.6		8.8	20 14.7	36.3	K
9.2	49 17.4	3.3		9.1	10 2.7	49.7		9.3	32.3	50.0		9.4	55 17.6	52.2		9.5	22 21.7	58.8	B
8.5	50 6.2	55.6	L	9.5	14.9	50.0		9.5	33 1.3	2.8		8.8	56 2.5	55.7	R	9.3	23 30.0	52.3	
7.5	17.7	57.8	L	9.4	23.7	41.8		9.2	58.6	9.4		8.3	19.2	55.6	K	7.8	56.9	28.0	B
9.0	23.1	56.1		9.5	52.4	12.5		9.2	35 0.6	50.8		8.5	57 13.4	25.0	K	9.4	24 6.4	13.6	B
8.9	32.6	40.4		8.6	56.6	0.6	K	9.5	1.8	40.5		8.4	17.1	31.3	K	6.8	17.2	11.2	K
9.5	51 11.5	32.4		8.0	11 4.7	46.9	K	8.6	5.3	16.2	K	9.3	58 39.3	17.9	K	9.3	41.3	29.5	
9.0	14.5	10.5	K	9.2	10.8	54.3		8.8	7.2	15.1	K	9.4	59 55.3	31.4		9.5	52.3	10.9	
9.5	45.6	54.0	B	7.3	24.2	2.2	K	9.5	25.5	52.1		7.3	0 20.2	1.0	K	7.5	25 15.1	52.2	K
8.3	55.4	3.1	L	7.0	12 44.3	47.2	K	8.8	45.7	57.1		8.7	28.9	9.3	K	9.1	35.5	56.9	
9.5	52 17.3	1.8		8.6	13 0.2	58.0	K	9.5	48.0	34.6		9.5	1 5.2	42.8		9.5	48.7	23.0	
9.5	35.3	36.1		9.3	14 14.3	11.1		9.0	36 2.8	54.4		8.5	12.7	14.8	K	9.5	26 10.5	55.9	B
8.8	37.7	39.8	B	9.0	42.6	23.9		9.5	37 27.0	58.5		9.0	16.4	39.0		9.3	44.0	17.3	
8.9	53 29.4	59.6		6.5	15 8.8	49.0	K	9.2	28.6	40.4		9.1	24.7	54.8		9.3	47.7	12.0	
5.3	54 17.2	1.5	K	7.3	52.8	4.3	K	9.5	38 57.1	12.4		9.0	2 24.0	15.8	K	9.2	56.0	46.9	
9.3	46.7	41.4		9.5	16 24.5	58.0		9.5	39 7.4	15.9	B	9.2	25.9	10.4	B	9.5	27 26.6	57.5	
9.2	53.5	16.3		8.0	34.6	51.7	L	9.3	54.6	18.3		9.2	3 11.3	58.7		8.1	29 22.1	50.2	L
9.4	55 7.6	3.9		9.4	48.3	49.3		9.3	40 13.6	9.0		8.4	4 20.4	36.5	B	9.1	22.3	20.2	K
8.8	29.0	36.7	B	8.3	49.9	22.5		9.2	13.8	50.7	B	9.5	47.2	11.7		9.1	24.2	19.6	B
8.7	54.1	56.6	K	9.0	17 0.8	8.1		9.3	16.1	53.0		9.5	5 43.9	14.5		9.0	28.0	2.7	
9.5	56 5.5	49.6		9.0	6.9	44.8	L	8.0	27.4	13.5	K	9.5	50.2	32.4		9.2	28.9	40.2	B
8.2	22.2	10.8	L	9.5	18 5.0	30.0		9.5	30.1	4.1		9.4	6 10.7	12.0		9.4	58.4	32.5	B
9.5	50.2	52.7		9.5	36.3	3.1		8.6	57.5	6.2	K	9.5	27.1	21.4		9.0	30 5.7	45.1	
9.5	57.2	44.5		9.1	19 25.3	53.2	K	8.9	41 3.4	52.5		9.5	27.3	17.7	B	9.3	31 27.8	21.5	
9.3	57 0.6	59.1	B	9.5	53.4	6.3		8.3	14.7	3.5	K	9.3	53.2	6.5		9.5	57.0	49.8	
9.0	3.5	35.3	K	9.5	20 37.0	51.1		9.0	18.7	22.8		9.5	58.5	21.4		9.4	32 8.9	44.3	
9.5	58 1.2	33.8		9.5	50.6	56.1		9.5	39.8	35.9		9.5	7 23.2	26.8		9.3	33 35.5	7.7	
9.5	4.3	11.9		9.5	21 0.9	43.8		9.1	40.2	27.3		9.0	30.9	47.9	K	9.0	44.1	7.6	
9.5	5.3	14.9	B	9.3	12.4	53.9		7.0	56.6	13.8	K	8.9	8 4.0	3.1		9.4	34 23.3	1.8	B
9.3	20.6	45.9		9.5	32.3	33.2		9.0	42 59.7	48.1		8.0	40.8	10.0	B	9.5	26.5	3.8	
9.5	41.3	39.0		8.3	43.7	18.7	K	8.8	43 5.9	38.0	B	9.5	58.2	0.5		9.0	38.7	29.4	
9.4	52.7	25.5		9.0	58.9	44.6	B	9.0	14.7	30.7		8.5	9 0.4	50.6		8.8	53.4	54.3	K
9.2	53.2	22.6		9.2	22 22.8	55.3		9.5	17.2	57.9		9.4	0.7	23.0		9.1	35 16.4	36.8	K
9.4	59 9.5	19.1		9.0	30.0	29.7		9.0	20.0	23.8		9.3	11.6	54.3		9.3	40.8	40.6	B
9.5	15.0	4.5		8.5	44.0	40.8	K	5.8	39.8	5.1	K	9.5	20.0	0.1		9.1	36 16.0	49.3	
8.7	15.8	23.5	B	9.0	23 3.3	46.3		7.7	44 0.0	47.5	K	9.5	10 14.7	46.3		8.8	43.0	43.6	K
9.3	0 9.6	27.0		8.6	10.1	4.4	K	9.5	2.8	32.7		7.0	56.0	27.0	K	9.1	50.6	48.5	K
9.3	42.1	3.3		8.8	19.3	26.3		9.5	45 0.2	26.5		8.2	11 7.9	5.1	K	9.5	37 4.2	7.5	
9.4	43.6	18.3		8.5	27.9	36.3	K	9 3	23.7	35.1		9.2	8.3	36.3		8.8	10.1	3.2	K
9.5	2 29.0	10.9		9.4	58.0	54.4	B	9.3	24.2	44.5		9.3	41.6	3.5	K	9.4	39.9	4.8	
9.5	31.6	23.2		9.5	24 8.0	54.9		9.5	24.3	16.7		9.3	13 2.2	22.5		8.8	46.0	14.2	K
8.5	52.8	59.6	K	9.4	28.8	53.4		9.5	39.5	50.0		9.3	20.8	6.9	K	9.3	50.2	29.4	
9.0	3 6.4	59.2	K	9.1	39.0	18.4		9.3	46 12.3	58.6		8.7	14 23.5	50.4	K	8.5	38 31.0	19.5	K
9.5	14.5	33.4		8.9	25 35.0	30.8		7.5	53.5	19.7	K	8.5	32.0	56.5	K	8.8	34.3	25.3	K
9.0	26.3	39.6	B	9.4	39.6	23.3		9.3	47 4.7	27.3		9.1	33.9	55.9	K	9.0	39 52.6	1.7	B
9.3	33.9	49.7		9.4	26 42.7	40.4		8.6	27.3	53.8		7.9	35.3	19.1	L	9.2	53.1	26.0	

2301—2360					2361—2420					2421—2480					2481—2540					2541—2600				
	10ᵘ—11ᵘ		+25°			11ᵘ		+25°			11ᵘ—12ᵘ		+25°			12ᵘ		+25°			12ᵘ—13ᵘ		+25°	
m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′	
9.5		40 46.0	32.8	R	9.5		9 30.7	42.8	B	9.3		40 42.4	16.1		8.5		9 50.7	25.9	K	9.5		32 6.5	57.6	
9.5		41 12.0	51.7		7.5		10 1.5	51.8	K	9.5		44.7	28.8		8.7		10 27.6	50.4	K	9.1		12.3	7.1	
9.4		50.1	3.4		9.5		11.9	12.3		9.5		41 13.9	59.1		9.3		31.6	56.5		8.5		52.7	27.0	
9.1		42 37.0	35.3		9.5		12 32.0	22.5		9.5		58.8	9.0		9.5		11 0.0	16.3		8.5		54.2	47.7	
9.2		44.3	56.2		9.5		14 34.3	55.7		9.4		42 20.9	50.9		8.8		30.3	5.6		9.5		34 26.7	23.5	
8.3		43 11.0	12.8	S	9.4		38.4	32.7		9.5		43 51.5	59.1		8.4		42.2	39.1	B	9.5		35 36.3	13.2	
9.5		59 7	30.7		8.2		15 0.4	32.3	K	9.4		44 48.3	16.2		7.5		56.1	52.4	K	9.2		53.3	18.5	B
9.4		44 43.1	51.1		9.1		16 6.3	12.7		9.4		45 14.3	58.5	B	8.8		12 9.5	5.2	K	8.0		53.5	6.1	L
9.5		45 7.0	44.9		9.0		10.6	44.9	L	9.5		56.0	38.2		9.5		23.2	55.3		8.5		36 2.8	24.3	L
9.5		57.0	20.8		9.1		28.2	7.4		8.5		46 39.3	30.3	K	9.5		42.4	3.1		9.4		4.4	37.0	
9.5		46 36.9	43.5		9.0		17 25.4	14.4		9.2		47 6.8	39.2		9.5		44.7	26.6		9.4		4.6	57.7	
9.3		47 14.6	30.0	B	9.1		38.9	10.6		9.1		41.4	30.6		8.4		13 28.5	1.6		9.3		5.2	40.7	
9.4		23.7	34.5		9.5		50.7	5.2		9.5		59.6	11.6		7.2		48.2	50.5	L	9.3		9.9	33.0	B
4.0		45.1	32.7	K	9.2		18 22.5	54.7	K	9.3		48 22.2	7.6		9.5		14 3.9	54.2	B	9.0		37 9.8	18.5	K
9.4		49.5	45.9	B	9.4		22.5	29.4		9.5		42.7	34.1		7.5		8.6	48.9	L	8.5		13.7	32.9	
9.5		54.6	55.4		7.3		19 30.3	49.8	K	9.0		58.8	46.8		8.5		10.7	18.7		9.0		38 25.7	42.9	B
8.9		49 36.9	9.0		9.2		49.8	17.1		9.4		49 7.3	21.7	B	9.4		46.9	54.5	B	9.2		28.3	24.3	
9.5		45.8	59.3		9.5		51.7	0.4		9.1		19.7	32.0	K	6.5		55.2	33.9	K	9.5		34.5	7.0	
7.7		50 19.0	8.7	K	9.5		20 12.1	37.0		9.2		27.7	1.0		9.5		15 5.4	56.5		8.5		43.3	24.6	
9.5		29.6	17.9		9.2		13.9	18.7		8.8		49.4	25.1		9.5		35.9	52.4		8.8		45.8	31.5	
9.4		51 17.1	9.3		8.9		17.0	6.2		8.7		50 26.7	45.2	L	7.0		16 12.0	23.9	B	8.5		40 8.2	2.4	K
9.1		57.4	42.3		9.5		26.7	54.9		7.8		37.3	57.4	K	9.4		57.6	6.8		9.2		21.9	47.6	
9.5		57.9	54.5	B	9.0		41.6	15.8		9.0		39.2	17.6		9.4		59.3	59.5		9.1		31.9	52.4	
9.1		52 1.1	21.0		9.2		22 8.9	35.4	K	9.2		51 42.0	28.8	B	9.5		17 49.4	19.7		8.9		41 10.7	55.8	
9.2		53 39.7	13.9	K	7.5		13.8	45.2	K	8.0		46.7	26.8	K	9.5		59.8	58.7		9.5		18.3	6.2	
9.5		51.4	24.0		7.8		23.9	41.5	K	9.3		52 41.4	16.5		9.2		19 58.3	41.2		8.9		25.2	33.3	B
9.5		54.6	0.7		9.1		23 13.8	32.5		9.5		48.7	29 6		8.0		20 11.6	27.6	B	9.1		25.6	31.6	
9.5		54 33.3	24.7		7.1		24 13.9	7.1	K	7.6		53 51.4	1.7	K	8.6		17.8	2.0	K	6.0		43.6	38.6	K
9.5		45.3	13.7		8.8		59.9	7.2	K	7.0		55 16.7	15.2	K	9.5		49.6	2.5		9.2		43 41.3	6.2	
9.5		59.4	47.8		8.8		25 8.8	32.7	K	7.5		21.0	37.9	K	8.3		59.2	50.5	K	8.4		46 11.4	56.3	K
9.5		55 16.7	51.9		9.5		26 25.7	23.4		9.5		23.8	12.2		9.0		22 23.3	18.4		8.0		49.8	24.9	K
9.5		17.1	4.0		9.2		28 1.8	4.6	K	9.4		56 2.3	28.0	B	9.3		25.5	44.5	B	8.8		52.5	32.2	
9.5		56 45.1	7.8	B	8.9		11.4	24.1		8.7		19.4	55.0	K	7.7		40.3	7.9	K	8.8		47 59.5	10.7	
9.4		47.0	54.0	B	6.8		51.7	50.0	K	7.3		38.1	45.4	L	8.3		42.9	20.8	L	9.3		48 9.2	33.5	
7.8		57 31.6	59.0	K	9.5		29 29.6	54.3		9.3		56.9	37.8		9.4		23 9.8	39.1		9.5		18.5	46.9	
9.2		32.4	54.1		8.8		40.1	47.7	K	9.5		57 33.3	2.2		9.2		43.5	51.7		9.5		49 22.0	26.0	
9.2		45.4	24.0	K	9.3		30 14.0	39.9	K	9.5		58 22.7	32.0	B	5.3		46.8	22.5	K	8.7		56.9	10.5	K
8.3		58 18.8	0.2		8.3		34.9	16.2	K	9.5		51.7	42.6		8.8		24 18.3	25.9	K	8.0		50 23.5	44.5	K
9.5		21.9	26.8		9.5		31 0.7	49.5		9.3		59 18.1	30.4		9.5		20.4	1.8		9.5		46.0	17.7	
8.9		59 36.9	36.7	K	9.5		32 1.9	42.2	B	9.3		43.7	24.8		9.5		44.2	52.2		9.4		51 8.1	18.5	B
9.3		52.8	30.3		8.7		35.1	19.6	K	9.5		0 13.3	50.9		9.1		25 17.7	2.2		9.3		30.5	13.5	
9.4		0 21.4	23.4		9.1		43.1	26.1		9.1		16.2	37.8		7.3		26 18.5	14.9	B	9.3		52 56.9	53.1	
9.5		1 0.3	10.6		8.4		33 40.3	37.1	K	9.4		52.9	43.4		6.3		21.2	4.9	K	7.4		54 1.4	5.9	K
6.0		1.8	27.8	K	9.5		34 13.4	42.6		9.5		55.4	45.4		9.3		30.3	58.2		9.1		53.5	33.9	
9.2		31.3	6.2		9.5		35 41.4	27.2		8.5		1 8.2	36.4	B	9.4		27 9.7	27.4		9.3		56 0.7	58.8	B
8.6		2 52.2	55.0	K	9.5		36 13.6	10.8		8.9		32.5	31.6	K	7.7		33.3	2.5	K	9.5		23.5	43.9	
9.1		54.8	36.1	K	9.2		24.7	48.8		9.1		2 40.8	18.6		9.5		35.8	11.6		9.5		57 51.0	23.6	
9.5		3 28.9	2.7		9.5		53.0	7.0		8.4		43.0	3.3	K	7.8		41.0	18.3	L	9.4		58.2	55.4	
9.5		33.1	7.4		9.0		55.9	11.5	B	9.4		58.5	53.2	B	9.1		28 27.8	15.3		9.3		58 5.9	55.0	
8.8		58.8	37.5		9.5		37 56.9	26.7		8.5		3 41.3	7.3	L	9.5		40.7	34.2		9.3		6.2	8.2	
9.5		4 16.8	29.9		8.1		59.7	55.5	K	7.7		53.8	33.6	B	9.5		29 20.3	14.3		9.1		19.3	45.6	K
8.1		43.9	26.4	K	9.5		38 1.6	20.7	B	9.0		4 13.2	34.7		9.4		30 8.4	39.1		9.5		35.5	40.4	
8.3		5 56.0	54.3	L	9.3		19.4	37.8		9.5		48.2	5.7		9.5		9.8	45.6		9.3		45.0	39.7	
9.5		6 13.9	35.7		9.5		41.0	2.4		9.5		5 35.5	17.0		9.2		11.2	51.9		9.3		55.8	9.1	
9.0		7 4.3	28.9		9.0		46.1	25.1		9.5		6 2.5	32.9		9.5		31 20.9	43.2		9.0		59 4.7	57.2	K
9.4		6.3	55.4		9.2		51.7	31.3		9.5		29.3	47.0		9.3		24.7	52.4		9.5		45.3	55.6	
8.5		9.6	46.5	B	9.5		52.5	11.6		9.5		7 49.0	56.3		9.4		28.3	59.6		8.8		51.0	32.7	K
9.5		21.5	5.0	B	7.5		39 47.1	14.1	K	9.3		9 11.2	25.6		8.5		41.0	11.4	K	8.8		56.0	49.8	
9.0		8 34.3	0.8		9.1		40 31.7	16.4		9.5		30.3	39.1		9.5		55.0	9.1		6.8		1 2.4	36.1	K
9.4		9 28.3	41.0		9.3		34.1	2.6	K	9.5		38.7	43.9		9.1		55.5	24.0		9.2		2 0.5	16.1	B

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	13ᵘ	+25°			13ᵘ	+25°			13ᵘ—14ᵘ	+25°			14ᵘ	+25°			14ᵘ—15ᵘ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	2 22.8	39.4		9.4	34 36.5	4.1		9.5	56 4.8	9.9		9.5	21 39.7	18.0		7.0	43 31.5	20.0	K
8.9	24.3	5.2		9.5	35 24.0	38.7		7.3	12.0	16.0	K	8.0	47.0	10.7	K	8.7	45 23.1	21.1	K
9.1	30.1	33.4	B	9.5	30.6	57.7		7.5	36.8	18.1	K	9.5	22 48.5	31.4		9.5	36.3	26.2	
9.3	3 8.1	22.9	K	9.5	36 19.8	26.1		9.5	45.0	2.2		9.0	23 10.4	59.3		9.3	53.0	5.5	
9.5	20.0	8.7		9.3	23.0	37.3		9.5	59 13.1	3.8		9.5	45.6	27.0		8.5	47 14.8	25.9	K
9.5	4 25.2	4.2		8.5	29.5	5.5	K	9.4	16.1	48.8	B	8.3	59.5	45.3	K	9.5	16.1	40.5	
9.0	31.5	30.2	K	9.5	31.0	35.1		9.4	49.8	43.3		9.5	24 36.1	37.4		9.5	48 28.6	35.2	
9.2	42.4	57.0		9.5	39.1	2.3		9.0	55.0	24.2		9.4	36.8	18.1		9.5	30.0	39.1	
9.1	54.0	27.4		9.0	37.4	39.1	K	9.4	0 13.5	7.7		9.1	42.6	7.7		9.4	36.1	11.0	
6.5	5 8.3	1.9	L	9.3	45.0	52.2		9.5	15.0	51.7		9.0	45.1	10.3		8.0	49 47.2	40.4	K
8.8	9.0	22.3	K	9.5	53.9	52.3		9.3	38.4	48.0		9.4	48.2	42.8	B	8.5	50 31.5	23.6	B
9.5	47.9	57.7		9.2	37 17.5	30.9		8.7	1 12.3	25.0	K	9.0	56.9	6.6		9.5	33.6	28.7	
9.5	6 5.4	41.4		9.4	31.0	18.9		6.2	38.5	0.2	K	9.5	26 23.0	33.9		7.5	51 2.7	54.4	K
9.5	7 41.0	12.1		9.1	38 6.7	22.0	K	9.5	46.1	14.2	B	9.4	26.7	41.1	B	9.3	6.2	19.4	B
9.3	8 0.5	58.7	K	9.5	39 2.6	39.9		9.5	55.3	27.8		9.4	27 8.6	54.0		7.5	19.4	15.6	K
9.5	9 48.1	56.8		9.5	6.6	0.7	B	9.5	2 10.2	56.2		8.1	50.3	1.2	K	7.0	52 28.0	38.0	K
9.5	10 40.3	11.7	B	9.4	28.0	56.0		4.8	3 47.7	47.2	K	8.1	56.2	1.6	K	9.5	49.6	15.4	
9.5	11 20.0	37.4		9.5	40 20.2	4.9		9.5	56.4	1.0		9.4	28 15.1	54.7		9.5	56.2	13.5	
8.0	58.0	21.7	K	9.3	45.3	16.8		8.9	4 35.8	14.3		9.0	16.7	4.8	K	9.4	55 5.8	41.4	B
9.1	12 28.4	53.6	K	8.8	41 52.5	54.1		9.0	6 5.4	22.3	K	9.1	44.0	16.9	K	8.9	36.5	25.4	
9.5	38.2	7.0		8.7	53.0	5.0	K	8.8	10.4	12.9		9.4	29 21.6	46.3	B	4.7	46.4	35.1	K
9.5	13 32.9	6.0		9.5	54.9	56.1		8.8	16.5	57.5	B	8.0	22.7	32.4	K	9.4	56 23.4	10.3	
7.8	44.0	23.8	K	9.3	42 39.4	0.7		9.3	54.5	14.0		9.3	33.2	20.1	B	8.4	34.9	27.3	K
9.5	14 59.9	57.9		9.5	43 16.0	2.0		8.0	7 5.3	28.2	K	7.5	30 24.6	5.9	K	9.2	57 8.5	58.8	L
6.8	15 6.4	39.2	K	9.4	44 0.0	57.7		9.3	49.6	56.7		9.5	31 32.1	9.6		9.5	25.9	45.5	
9.0	25.5	2.9	K	9.2	7.9	30.4		8.9	8 6.0	27.5		8.5	49.0	47.0	K	9.5	58 25.4	19.2	
8.9	38.0	12.1	B	9.3	11.3	25.2	B	9.0	18.5	41.3		9.5	32 10.5	33.6	B	8.5	25.4	11.0	K
9.5	16 22.8	59.7		9.5	23.8	44.0		9.4	19.1	50.7	B	8.2	19.0	13.2	K	9.4	36.9	3.0	
9.4	17 1.4	44.0		7.5	31.8	24.9	K	9.4	26.0	21.1	B	9.2	33 22.1	40.4		9.1	45.6	2.8	K
9.0	44.2	22.8	K	9.5	51.0	0.7		9.5	9 28.1	0.2		9.1	33.0	18.7		9.4	59 17.4	52.0	
9.3	46.0	29.0		8.0	45 6.6	24.3	K	9.4	10 6.3	59.2		9.2	38.6	46.3		8.4	58.9	29.9	K
9.0	57.1	38.9		7.5	13.3	45.6	K	9.0	24.9	9.2		9.4	53.1	36.3		9.4	0 51.7	36.6	
9.0	18 57.6	12.3		9.2	46.9	43.3	K	9.4	35.9	20.9		9.5	34 26.8	23.5		4.8	56.4	26.8	K
9.0	19 22.3	33.6	K	9.5	58.5	42.6	B	9.2	46.8	59.5		9.5	31.9	47.7		9.2	1 12.4	28.6	B
9.5	41.2	9.0	B	9.5	46 10.9	24.7		9.4	11 5.6	9.0		9.5	35 16.8	41.4	B	9.4	2 7.7	59.3	B
9.5	47.6	27.5		8.7	36.4	40.1	K	9.3	35.0	54.1		7.5	16.9	9.3	K	6.3	17.9	39.9	K
8.5	20 36.2	4.1	K	9.2	47 38.5	56.1	B	8.6	12 2.8	57.9	K	8.8	51.6	9.3	L	7.3	3 7.4	12.8	K
8.7	40.6	46.3		8.7	42.6	55.3	L	9.4	13 3.9	38.9		9.5	56.5	49.8		9.3	59.9	34.8	
8.4	52.3	9.2	K	9.2	53.6	10.9	K	8.0	57.4	24.7	K	8.9	36 30.0	31.8		8.1	4 9.5	59.9	K
9.5	22 34.5	16.8	B	9.5	48 11.7	41.6		9.5	14 5.9	47.2		8.8	36.3	1.4	K	9.0	15.9	48.9	K
9.5	23 59.0	13.3		9.5	49 13.3	29.8		9.0	13.0	34.6	B	8.8	51.0	37.0		9.5	24.4	31.7	
9.4	24 30.5	18.0	B	8.5	17.3	13.5	K	9.4	24.8	58.6		9.5	51.7	18.3		9.5	5 7.9	48.5	
6.0	25 56.2	6.7	L	9.2	36.4	19.9		9.2	30.6	58.3	B	9.4	37 4.4	21.1	B	9.5	58.9	41.3	
9.1	26 11.0	3.6		9.5	50 5.5	10.9		9.5	15 50.3	19.2		9.5	44.6	42.5		8.5	6 38.4	17.0	K
9.5	22.5	44.3		9.4	19.5	48.7		9.0	16 7.7	52.7	B	9.5	38 18.0	1.1		9.5	8 20.9	32.0	
9.5	27 5.3	35.4		9.1	21.2	38.0		8.8	12.3	29.2	B	8.4	19.0	22.2	K	9.5	43.3	41.7	
9.3	40.3	47.4		9.1	24.9	23.1		9.4	18.8	58.5		9.4	26.6	45.6		9.4	49.8	42.7	B
9.1	40.6	38.8		8.0	48.7	43.6	K	9.2	29.5	56.2		9.4	34.7	36.7		9.0	9 58.7	13.4	B
8.5	28 20.0	32.2	K	8.9	51 13.2	38.1	B	9.3	34.3	25.2		8.2	39.5	19.3	K	9.4	10 15.6	5.2	
9.5	27.6	19.9		9.4	33.8	15.4		6.1	37.6	59.6	K	9.4	40 12.1	23.1		9.2	29.9	44.8	
9.5	31.3	23.6		9.5	52 10.0	36.7		9.2	48.5	48.9		8.7	17.0	11.5	K	8.4	54.9	44.4	K
6.0	30 9.4	21.0	K	6.8	13.2	24.6	L	9.4	17 13.2	32.8		9.1	29.1	23.6		9.4	11 55.7	30.3	
9.5	10.3	33.2		7.5	44.5	0.3	K	8.7	20.1	12.2	K	9.3	30.6	34.6		9.4	12 1.8	8.0	
9.5	18.5	26.9		8.9	45.6	28.1	L	8.7	22.3	53.1	L	9.5	55.0	59.4		9.5	5.4	31.0	
8.9	32.9	49.1		9.2	53 3.3	55.7		9.0	57.5	24.5	K	8.5	41 28.4	3.2	L	9.5	20.0	55.2	
9.2	34.3	28.2	B	9.3	12.2	32.2		9.1	18 16.1	16.2		9.5	48.1	26.9		8.0	43.6	42.7	K
9.4	31 47.4	6.7		9.3	13.6	41.2		9.3	19 15.6	9.6		9.4	42 4.8	12.3	B	8.3	46.4	25.9	K
9.0	32 58.0	15.3		9.5	50.3	55.1	B	9.4	21 6.3	51.8		8.5	21.0	11.4		9.4	51.9	30.3	
9.5	33 39.8	35.0		9.3	55 26.1	3.7		9.5	24.3	12.7		6.8	51.5	45.9	R	9.5	13 16.0	45.8	
9.4	34 11.0	24.0	B	9.5	32.3	50.1		9.1	28.5	36.3	R	9.5	43 13.6	46.0		9.3	14 14.6	5.3	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	15ᵘ	+25°			15ᵘ	+25°			15ᵘ—16ᵘ	+25°			16ᵘ	+25°			16ᵘ—17ᵘ	+25°	
m				m				m				m				m			
8.9	14′ 46.″7	12.′6		9.5	38′ 29.″9	18.′2		9.5	58′ 39.″2	35.′3		9.3	19′ 53.″5	21.′6		9.2	43′ 14.″0	37.′8	K
6.0	50.4	29.5	K	9.3	36.8	11.0	B	9.0	43.3	37.8	K	8.7	59.6	27.5	K	9.5	15.3	3.5	
9.5	15 29.6	55.7		7.5	46.4	9.7	K	9.0	43.8	38.3	K	9.5	20 54.0	56.8		9.5	17.8	29.1	
7.7	16 0.6	46.1	K	9.4	48.2	25.2	B	9.5	54.3	52.6		9.0	21 23.9	32.8	L	9.4	30.0	59.1	
9.4	17 8.9	21.9		8.5	40 43.1	32.1	K	9.0	59 32.0	39.7	K	9.1	47.0	24.8		8.8	34.8	45.6	K
9.5	13.9	33.2		9.4	41 9.5	0.5		9.4	35.8	43.5		8.0	54.8	30.9	L	9.5	52.2	39.3	
9.5	37.4	20.8		9.5	22.7	6.8	B	9.2	45.9	12.9	K	8.4	22 19.6	49.9	K	8.9	44 39.2	32.9	K
8.0	37.5	49.0	K	9.1	42 20.8	58.3		9.5	51.8	28.5		9.5	45.0	58.6		9.5	45 20.1	46.7	
9.5	42.9	8.0		9.5	31.7	49.2		9.4	0 2.0	18.6		9.3	47.5	30.5		9.4	49.9	26.0	
8.0	44.6	34.1	L	9.5	38.9	29.2		9.5	41.7	48.8		9.2	49.2	10.4	K	7.1	50.3	38.7	K
9.5	18 51.8	27.0		9.3	43 5.9	45.4		8.3	1 20.8	17.9	K	9.4	23 0.5	5.3		9.5	47 13.3	3.8	
7.3	58.4	19.4	K	9.3	23.6	40.0		9.5	44.0	50.0		9.5	25 4.9	13.6		9.5	31.6	16.8	B
9.0	19 51.9	16.2	L	8.2	25.0	54.1	K	9.5	47.3	42.6		8.8	27.3	42.6		9.5	51.8	39.4	
9.3	20 27.8	24.9		9.4	25.6	26.6		9.5	49.9	17.6		7.7	26 18.1	9.0	K	9.5	48 3.4	10.3	
9.5	21 2.2	1.2		9.5	44.4	44.8		9.5	2 18.1	11.3		9.4	42.3	58.8		9.5	5.3	25.2	
6.0	26.4	35.9	K	8.3	44 17.0	0.0	K	8.4	47.6	18.8	K	9.5	55.5	4.1		6.3	49 6.5	58.8	K
9.5	35.9	13.5		9.3	28.3	13.1		9.5	3 28.5	53.5		7.7	27 19.6	59.7	K	8.8	44.7	44.1	K
9.4	48.7	25.0	B	8.4	55.8	30.4		9.5	4 2.2	6.5	B	8.3	31.9	10.0	K	9.5	50 8.1	32.1	
9.5	59.1	22.1	B	8.9	45 3.4	37.3		7.1	3.6	52.1	K	8.8	44.7	39.2	K	9.1	13.2	19.9	
9.5	22 8.0	22.1	B	8.8	9.5	33.8		9.5	28.1	50.0		9.0	45.8	4.1		9.4	48.8	54.6	
9.5	28.9	54.3		7.8	22.7	45.1	K	9.4	5 5.9	5.0		7.7	28 5.7	46.8	K	9.5	51.0	30.6	
8.1	40.0	49.4	K	9.3	34.9	47.6		8.5	18.5	20.2	K	9.5	25.4	51.9		9.1	58.1	10.4	K
9.4	23 1.4	33.8		9.3	39.4	23.9		9.2	19.6	1.1	B	9.2	53.8	24.8	K	9.5	51 6.0	52.9	
9.5	57.5	35.5		9.5	46 6.3	7.7		8.8	23.2	48.2		9.5	29 50.6	29.5		9.5	10.0	31.0	B
8.5	24 6.4	49.6	K	9.2	21.1	37.5	K	9.5	39.0	0.5	B	9.5	58.0	45.0		8.5	16.3	24.3	K
9.3	19.3	48.5		9.5	26.2	1.3		9.0	48.3	36.5	K	9.4	30 0.5	18.7		6.3	33.8	35.3	K
9.5	25 9.4	24.8		9.5	47 30.0	2.5		9.5	6 26.7	49.2		9.0	3.6	49.6		9.2	39.7	12.4	
9.5	46.4	11.9		9.1	48 5.8	16.5		9.3	35.5	52.3		9.5	42.1	39.2		8.9	40.7	29.3	K
9.5	26 18.1	2.5		9.5	37.7	25.5		9.5	7 16.7	28.0		9.3	31 41.3	13.5		9.3	41.7	24.4	B
9.5	27 32.9	45.1		9.0	44.6	41.6		9.5	17.4	44.0		8.6	32 18.6	42.3	K	9.2	43.1	21.0	
9.5	28 10.4	56.5		8.8	48.0	0.9	K	9.3	25.0	36.2		9.3	33 22.8	49.4		9.5	52 6.5	32.7	
8.3	36.5	28.6	K	9.3	59.3	55.0		9.4	25.3	15.4		9.4	39.8	36.7		9.2	8.9	24.2	K
9.0	36.9	18.0	K	9.5	49 21.3	13.8		9.5	47.2	57.9		8.2	34 2.9	49.6	K	9.4	15.1	59.0	
9.2	59.2	48.5		8.3	50 19.1	35.8	K	9.5	48.6	15.2		9.1	41.9	18.7		8.6	15.2	34.2	K
9.5	29 7.0	0.6	B	9.5	49.9	3.2	B	9.5	8 14.2	29.9		6.0	35 0.0	8.1	K	8.6	53 8.7	10.0	K
8.8	29.6	6.9	K	9.0	59.2	39.0		8.3	10 2.1	38.8	K	9.2	39.5	38.3		9.3	15.0	44.8	
8.9	55.5	20.3		8.5	51 11.5	1.6	K	8.6	17.7	57.0	K	9.5	43.1	25.0		9.4	40.9	3.9	
8.6	56.5	45.4	L	9.5	32.4	18.6		9.5	11 11.0	41.7		9.0	36 12.2	43.1	K	8.4	54 54.1	52.7	B
9.5	30 10.7	35.1		9.5	33.1	21.0		9.5	16.2	58.0		9.0	15.9	43.1	K	8.5	55 11.0	10.9	K
9.4	24.0	9.4		8.7	53.2	14.5	K	9.5	43.1	15.7		9.4	31.5	23.6		8.4	42.0	51.0	L
9.5	41.2	28.9		9.5	52 11.5	57.0		9.5	47.3	22.1		9.5	37 13.8	47.3		9.5	45.8	41.6	
9.5	31 33.6	37.6		9.5	24.2	42.3		9.5	12 21.6	23.8		8.2	20.7	25.0	B	7.5	56 3.7	14.3	K
8.9	55.8	38.2		8.1	39.3	59.5	B	9.4	38.8	46.2	B	9.5	51.2	2.5		6.0	21.8	43.5	K
8.9	57.2	2.2	K	9.0	44.4	37.2		9.5	58.3	49.3		9.4	38 5.9	15.4		9.2	26.2	55.4	K
9.5	32 26.8	56.1		8.3	49.1	2.0	K	9.5	13 11.7	42.2		9.5	39 4.2	53.6		9.2	32.2	52.7	
9.5	33 6.6	37.2		9.0	54.1	26.8		9.5	14 17.3	25.0		9.1	15.5	27.9	K	8.6	48.6	9.6	K
9.5	7.2	4.6		9.0	55.3	16.6	K	9.5	17.5	55.8		9.4	21.8	13.7		8.5	57 1.0	51.7	L
9.4	21.5	49.6		9.2	53 12.0	9.4		8.7	46.4	18.3	K	9.3	39.6	5.2	K	9.5	1.3	45.7	
9.5	34.2	26.5		8.0	23.8	51.1	K	9.5	15 17.6	22.4		9.5	56.1	29.1		8.6	3.7	35.0	
9.0	35 5.2	58.6	L	9.5	55.1	28.6		9.5	59.3	50.7		9.0	40 0.7	10.8	K	8.5	10.8	3.0	K
9.5	5.5	29.3		9.3	55.1	8.9		8.4	16 13.1	5.5	K	9.2	34.5	27.7		9.3	15.4	4.2	
9.5	25.6	53.6		9.1	54 34.5	48.6		9.4	24.2	26.0		9.5	46.0	7.4		9.5	58 34.7	59.3	B
9.0	32.3	29.7	K	9.5	48.4	14.1		9.0	36.8	19.5	L	9.4	47.6	31.1		9.5	59 9.7	17.7	
8.6	36 39.0	16.9	L	9.5	58.6	15.1		9.2	17 8.0	45.3		9.5	53.3	57.2		8.6	25.4	47.0	
8.9	45.9	55.4		9.5	55 47.2	21.5		9.4	35.6	48.8		9.5	41 2.8	19.3		9.0	26.3	49.5	
9.0	37 23.7	6.6		9.4	56 5.0	9.9		9.2	18 10.0	32.6	B	8.3	37.9	53.7	K	9.3	38.5	6.7	K
8.0	46.3	25.8	K	9.5	45.4	45.5		9.5	55.0	49.9		7.8	42 7.9	48.6	K	8.2	46.5	42.4	B
8.9	38 2.2	8.7	K	9.5	57 32.2	6.0		9.5	19 13.3	0.4	B	9.5	35.8	18.6		9.4	0 13.5	52.5	
8.9	18.5	4.3	K	9.2	34.2	45.8		7.8	31.4	33.0	K	9.2	38.4	30.7		9.0	27.4	35.0	
9.3	22.2	31.5		7.5	58 4.6	37.9	K	9.5	53.4	53.8		9.4	43 7.2	33.2	B	9.5	1 9.0	31.8	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	17ʰ	+25°			17ʰ	+25°			17ʰ	+25°			17ʰ–18ʰ	+25°			18ʰ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.8	1 16.3	5.8	K	9.3	19 50.9	40.4		9.4	34 40.3	3.0		7.8	49 40.2	8.8	K	9.5	3 14.9	51.2	
9.4	19.1	56.0		9.5	59.6	16.7		8.7	44.5	25.9	L	9.0	40.4	18.0		9.4	4 15.6	11.4	
9.3	57.8	34.9	K	8.7	20 12.7	8.2	K	9.5	51.7	55.2		9.1	50.2	15.3	K	8.5	20.9	5.4	B
9.5	2 20.7	35.3		9.1	15.5	45.1		9.0	35 17.0	14.3	K	9.1	50 8.4	9.1		9.4	24.0	13.4	
9.2	3 32.7	53.9	K	9.5	33.4	31.5		9.5	38.5	25.0		8.4	10.1	0.8	K	9.3	29.7	20.8	
9.4	4 12.7	50.6	B	9.5	58.0	59.1		9.5	56.7	11.5		9.3	29.5	27.0		9.4	32.5	2.7	
9.5	36.4	46.0		9.5	59.9	20.6		8.2	36 14.5	30.9	K	9.5	43.4	54.7	B	9.0	36.9	53.7	
9.4	36.5	6.0		9.4	21 3.5	48.3		7.8	36.5	52.6	K	9.3	49.2	28.7		9.5	41.0	41.7	B
9.5	5 16.4	27.7		9.4	29.9	14.7	B	9.3	43.8	9.9		9.0	57.3	34.4		9.3	46.8	30.7	
9.5	17.2	56.7		9.5	57.3	58.9		9.3	52.2	30.8	B	8.5	58.7	14.4	K	9.3	58.9	55.9	
9.5	34.6	59.0		9.5	22 37.7	45.2		9.5	37 38.5	40.2		9.0	59.2	53.2		9.5	5 21.5	4.5	
8.4	6 11.7	26.0	K	9.5	51.9	24.0		9.5	38 40.0	59.0		9.0	51 25.7	12.6	K	8.3	27.2	17.2	K
9.4	26.4	39.1		9.1	23 19.0	43.2		8.7	48.0	4.8	L	9.2	44.2	26.7	K	7.2	38.8	31.7	K
9.5	7 7.4	29.1		8.7	41.9	4.5	K	9.5	39 19.0	59.4		9.5	56.0	9.6		9.5	42.9	58.3	
7.8	11.8	10.1	K	8.7	24 1.3	11.8	K	9.0	22.0	11.9		9.5	52 44.1	50.1		8.5	51.3	20.8	K
9.5	53.7	4.0		9.5	20.6	13.2		9.5	24.1	6.3		8.3	44.1	1.5	L	9.1	6 18.0	26.7	
9.1	8 17.7	12.3		9.5	28.1	5.8		9.2	40.0	46.8		9.5	56.0	53.0		9.5	27.9	58.3	
9.1	19.8	20.9		9.5	47.0	31.9		9.5	47.6	5.2		9.5	53 28.5	14.9		9.3	28.3	6.4	
9.2	35.6	8.7		9.3	25 13.4	39.7		9.5	40 2.2	56.0		8.8	57.8	0.7		9.4	34.6	11.1	
9.5	52.9	31.2		9.4	53.4	20.7	B	8.8	26.5	32.0	K	9.4	54 0.6	33.9		9.3	56.5	3.4	
3.0	9 6.6	1.0	K	9.2	26 12.8	39.3	K	9.5	28.7	59.7		9.4	13.5	55.1		8.0	7 0.3	36.8	B
9.3	14.0	11.1		9.4	22.9	6.7	B	9.0	45.7	15.5	K	8.8	46.0	54.6		9.3	1.3	23.5	
9.5	37.4	11.9		8.2	36.0	50.8	L	9.2	46.4	6.9		9.3	55 21.8	58.5		8.0	11.6	15.2	B
9.2	40.8	6.2	K	8.7	39.8	40.0	B	7.0	49.2	49.4	K	7.2	41.0	29.8	L	8.3	50.5	33.0	B
9.4	48.0	59.9		9.5	40.7	7.7		9.1	41 17.5	34.0	K	9.5	42.5	3.8		9.0	8 16.3	16.1	
9.0	52.0	59.9	B	9.5	56.3	31.8		9.5	32.0	17.7	B	9.5	47.7	8.3		9.2	23.7	8.4	
9.4	10 5.2	25.9	B	9.1	27 4.9	15.5		9.5	51.0	38.9		9.5	48.2	18.8		9.5	44.1	42.2	
9.0	8.1	44.8	K	9.5	33.5	59.6	B	8.9	59.7	28.9	K	9.2	56 3.0	5.9		9.5	50.8	8.6	
9.0	34.7	35.3	K	9.3	33.7	17.1		9.5	42 0.0	51.5		9.0	5.0	51.0		9.5	55.7	1.2	
9.5	59.8	20.2		9.1	41.9	5.1	K	9.1	20.5	26.5	K	8.8	6.8	0.6	K	9.5	9 22.3	57.9	B
8.9	11 24.2	11.4		9.3	42.0	51.2		9.3	38.1	5.1	K	8.8	24.7	38.4		9.5	30.5	54.4	
8.5	25.8	33.1	K	9.2	43.0	48.4		9.5	39.7	23.7		9.0	25.2	47.3		9.3	36.3	10.4	
9.2	48.8	18.4		9.2	43.1	18.9	B	5.7	56.5	41.0	K	9.5	45.4	55.6		9.1	42.0	18.3	
9.5	49.5	39.4		9.4	57.0	41.6		9.1	43 2.6	14.2		9.0	57 13.2	10.7		9.4	43.8	15.3	
9.5	12 3.3	5.9		9.5	28 2.9	59.4	B	9.2	37.4	46.7	K	8.5	17.2	22.2	K	8.2	54.0	44.7	L
9.3	4.7	33.8	K	8.2	13.3	31.0	K	9.5	44 17.7	47.4		9.2	47.8	59.2		9.5	10 9.3	43.0	
9.1	6.4	45.4	B	9.5	30.3	26.6		7.0	21.6	20.1	L	9.5	56.0	0.9		9.5	15.7	32.5	
9.5	12.5	15.5	B	9.3	34.5	33.7		9.0	27.3	7.9	K	9.4	58 0.8	58.3		9.5	51.1	39.8	
7.2	36.4	57.4	K	9.5	29 2.4	59.8		9.5	45 43.8	15.4		9.3	2.0	20.1	B	9.5	11 9.4	29.7	
9.4	13 16.7	26.7		9.1	18.5	26.2	K	8.9	43.9	7.9	K	8.8	16.1	20.5	B	9.3	22.0	40.8	
9.5	23.7	30.9		8.8	22.2	45.7	K	9.5	46.8	34.2		9.3	18.5	7.8	B	8.5	12 24.7	15.9	K
9.2	27.0	3.4		9.1	23.0	51.9		9.2	57.0	31.8		9.0	43.2	20.1	K	9.5	32.4	53.3	
9.5	32.9	20.5		9.3	29.5	34.1		9.3	46 23.4	4.7		9.0	59 20.4	51.8	K	9.5	35.5	42.8	
9.5	45.0	35.0	B	9.1	33.0	41.6		7.8	29.2	1.4	K	9.5	22.3	59.6		9.2	48.0	53.8	
8.9	14 10.0	47.7	K	9.4	35.5	59.5		8.5	40.5	37.0		9.5	38.2	25.1		8.7	51.6	23.2	K
6.0	17.1	40.5	K	9.5	30 19.2	9.0		9.4	49.7	55.6		8.5	0 5.4	33.9	L	9.2	13 1.5	15.3	
9.5	25.0	48.1		9.2	24.5	49.8	K	9.5	47 15.4	42.5		8.1	5.9	40.4	K	9.5	24.4	52.6	
9.5	49.7	9.5		7.4	32.0	42.6	K	7.9	24.0	1.6	B	9.5	20.0	22.0		9.5	29.2	20.0	
8.6	15 19.9	52.1	K	9.2	58.1	8.5		9.3	44.1	23.6		9.5	25.9	11.8		9.5	33.0	55.1	B
8.9	16 9.0	34.2		9.3	31 30.0	24.7	K	9.4	48.6	27.6		8.4	29.0	20.3	K	9.5	48.3	20.0	
9.5	12.1	59.0		9.4	40.5	24.1		9.5	56.4	16.4		9.3	33.9	46.7		9.0	51.8	43.2	
7.7	31.0	1.6	K	9.5	43.0	38.8		9.2	48 22.0	30.8		9.5	1 3.5	54.9		9.5	14 12.1	34.1	
9.3	17 13.5	33.1	K	8.2	32 32.4	36.2	B	9.4	36.7	26.8		9.3	9.3	41.0		8.2	13.3	28.2	K
8.3	15.0	54.1	L	9.0	55.5	23.4	K	8.8	39.3	28.0	B	9.5	28.7	4.0		9.5	32.5	36.3	
9.5	46.4	25.3		8.5	33 23.0	24.7	K	8.5	50.4	4.7	K	9.0	32.0	21.2	K	9.5	34.6	50.6	
9.5	52.7	47.3		8.7	42.1	4.3	K	8.6	59.7	39.4		9.5	40.5	39.8		9.5	40.0	47.9	
9.5	18 6.4	41.5		9.5	47.2	14.5		9.5	49 6.8	10.8		9.4	45.8	25.0	B	9.4	44.3	42.0	
9.4	45.6	43.4	B	9.4	34 5.0	47.4	B	8.9	16.8	47.3	B	8.0	2 14.3	10.2	P	9.5	15 0.9	17.5	
9.2	19 5.8	19.2		8.7	17.6	10.2	K	8.0	30.1	17.4	K	9.4	51.4	48.8		9.4	2.0	33.1	
9.0	25.7	21.9		9.4	35.5	16.9		9.1	33.2	38.0		8.8	59.0	15.1		9.2	29.5	37.5	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	18ᵘ	+25°			18ᵘ	+25°			18ᵘ	+25°			18ᵘ—19ᵘ	+25°			19ᵘ	+25°	
m				m				m				m				m			
9.0	15′ 39.3	59.3	K	9.3	26′ 19.1	17.6	B	9.4	39′ 27.4	21.0		9.2	52′ 16.7	7.3		8.7	4′ 17.7	49.9	
9.4	16 13.9	57.8		9.5	35.3	7.4		9.5	48.1	25.2		9.0	17.3	9.8	K	8.8	22.6	16.0	K
9.5	36.7	37.8		9.1	37.2	38.1		8.0	40 41.5	23.2	K	7.9	34.3	3.2	K	9.5	33.2	22.5	
9.5	54.8	16.8	B	7.5	41.0	23.3	K	9.4	43.0	55.1		9.0	36.2	41.6		9.5	55.5	30.7	
9.5	54.8	58.6	B	9.1	49.2	54.2	K	9.1	41 4.8	53.9	B	8.2	38.5	51.9	L	8.2	5 3.7	9.0	B
9.2	17 10.1	53.6		9.1	58.0	28.3		9.4	5.2	44.2		9.5	38.8	6.6		9.5	31.1	21.1	
9.2	17.9	42.6		9.4	27 14.4	13.5		9.4	17.5	54.9		8.5	47.8	16.0		9.2	42.8	3.5	
9.3	29.7	3.6		9.2	24.1	45.3		9.4	42 20.8	16.6		9.5	53 8.3	37.6		8.8	6 26.9	30.4	
8.5	31.5	55.5	L	9.2	50.5	56.1	K	9.5	25.2	2.5		9.5	9.0	23.3		9.3	31.7	24.0	
8.7	41.3	29.4	K	9.1	28 3.0	58.8	K	8.3	26.3	53.2		9.5	25.9	28.4		9.5	41.3	45.2	
9.5	55.3	54.6		9.0	15.5	7.7	K	9.0	27.0	34.6	K	9.4	34.5	9.9		9.4	42.5	2.3	
9.2	18 3.0	19.0	B	9.5	16.7	18.1		9.3	43 16.3	42.3		9.3	54 11.4	55.3		9.5	7 2.0	51.9	
9.5	5.1	14.5		9.5	25.8	55.4		8.7	34.8	24.8		9.3	15.9	48.1	B	9.5	27.7	5.4	
9.3	9.2	59.6		9.3	40.0	24.8		9.5	42.4	5.8		9.0	23.0	36.3		9.2	38.1	0.6	
8.8	35.3	26.5	K	9.4	54.3	8.2		9.5	44 8.5	25.0		9.4	44.7	56.6		8.9	44.1	58.1	K
9.5	46.0	7.0		9.5	29 40.1	30.5		9.4	21.1	35.1		9.3	48.3	26.5		9.3	48.9	31.8	
9.1	59.2	30.7		9.3	41.0	47.2		9.4	23.3	33.1		9.3	52.1	13.4		6.9	55.8	30.7	L
9.2	19 23.7	32.4	B	8.1	51.3	14.6	L	9.3	28.3	12.6		9.4	55 10.5	45.5		9.5	8 16.8	1.5	
9.4	25.6	4.0	B	9.0	30 0.9	47.9		9.5	35.8	59.9	B	9.5	28.2	6.0		9.5	30.3	40.5	
8.0	36.9	55.3	K	9.5	1.7	32.4		9.5	57.2	11.6		9.5	29.0	3.4		9.4	46.3	39.1	
9.0	40.3	59.9	K	8.4	4.3	35.3	L	9.4	57.8	59.8		9.4	34.3	9.9		9.0	51.9	32.7	R
9.4	20 13.7	57.0		9.5	49.6	35.9		9.1	45 5.5	52.1		9.5	38.6	48.9		8.9	9 3.0	0.2	
9.5	14.2	28.5		9.4	31 7.7	3.5		9.5	37.6	0.2		8.8	58.5	33.1		9.5	8.7	42.9	
9.0	22.9	8.4		9.5	15.6	1.1		9.2	43.4	32.1		9.2	56 15.4	6.2	B	9.0	22.6	12.2	K
8.7	23.3	51.1	B	9.1	31.2	0.1	K	9.5	45.5	4.2		9.4	22.5	10.7		9.1	26.4	27.0	
9.5	30.2	34.6	B	9.4	34.9	20.3		9.2	46.0	9.1	K	9.5	46.9	17.3		9.5	29.1	56.4	
8.8	52.0	53.7		9.4	44.8	49.9		9.5	55.8	37.3		9.5	50.3	38.1		9.2	34.4	30.4	R
8.5	21 7.1	47.1		9.4	32 4.1	9.1		9.5	46 5.7	13.3		8.3	57 13.2	4.8	K	8.8	41.5	28.6	
8.9	9.8	49.4		9.4	22.6	2.8		9.3	17.9	38.1		8.9	13.7	48.2	S	9.3	10 4.3	43.7	
9.0	13.0	46.0		7.4	30.3	8.4	K	7.7	21.3	50.9	L	7.3	22.5	36.8	K	8.7	18.2	45.5	
9.5	16.1	3.4		9.2	45.3	7.9	K	9.0	38.7	50.5	B	8.0	30.5	50.4	K	9.2	34.1	12.3	K
9.2	22.2	44.2		9.5	33 16.2	0.9		9.2	39.3	51.2		9.0	52.8	49.4	K	8.9	38.2	24.9	K
9.1	40.4	3.4		9.4	25.3	28.4		9.5	47 18.0	1.5		8.8	58 14.2	13.9		9.5	38.2	58.0	
9.4	42.3	42.9		8.5	44.1	45.0		7.7	23.6	11.9	K	9.0	41.4	28.2		9.3	51.7	49.8	
8.5	52.3	30.3	R	9.0	58.3	27.3		8.4	30.5	42.3	K	8.2	47.4	33.6	L	9.5	51.8	34.4	
9.5	22 34.4	40.5		9.4	34 0.5	38.6		9.1	44.6	32.9	B	9.5	52.0	39.7		9.5	11 9.2	50.3	
9.1	23 7.9	23.2	R	9.5	6.9	53.2		9.5	55.5	29.4		7.6	59 7.3	37.3	L	9.5	12.0	21.0	
8.9	20.3	50.9	K	9.5	42.7	59.8	B	9.5	48 11.2	4.6		9.5	17.5	15.6		8.9	13.9	54.3	K
9.2	39.6	9.4		9.2	53.0	18.6	K	9.5	14.2	0.1		7.5	25.4	42.3	L	8.5	46.5	35.5	B
8.7	41.1	40.3	L	9.5	35 23.3	51.2		9.5	54.8	8.9		9.5	43.1	4.6	B	8.0	52.8	6.0	R
7.9	43.5	57.8	K	9.4	56.4	52.1		9.4	49 21.0	6.9		9.5	48.6	57.1		9.5	57.7	52.9	
9.0	58.9	53.4	K	9.5	57.6	6.9		9.5	22.8	50.9		9.5	51.5	0.9		9.5	59.3	15.1	
8.2	24 5.3	40.0	L	9.5	36 28.5	20.7		7.8	46.7	30.4	L	9.2	0 8.3	42.5		9.5	12 0.1	7.2	
9.3	10.3	8.9		9.3	29.7	50.5		9.4	50 20.4	40.7		9.0	38.3	17.8	K	8.7	19.6	55.1	
9.0	21.9	5.4		9.4	32.6	29.0		9.4	27.3	55.1		8.9	1 15.5	2.8		8.9	24.2	53.6	
9.4	31.1	21.0		8.2	51.8	38.0	B	9.4	51.9	41.9	B	8.5	26 3	45.0	K	7.2	31.7	47.8	L
9.0	33.4	12.6		8.8	57.4	15.8		9.0	55.7	55.6		9.2	28.2	0.2		9.5	34.2	53.1	
9.4	25 5.0	0.2		8.5	37 10.1	18.8	L	9.5	51 4.3	11.0		9.2	32.3	31.2		9.5	45.4	20.1	
9.1	7.3	2.7	B	9.1	14.3	47.2		9.4	5.8	17.3		9.4	33.6	26.5		9.5	57.5	25.6	
9.2	11.3	5.3		9.1	35.2	0.2	K	8.8	8.6	57.3	B	9.0	59.2	13.2		9.0	13 19.6	58.4	
8.2	25 13.5	3.5	K	9.5	55.9	29.1		8.2	9.8	48.7	L	9.4	2 1.5	59.1		9.1	24.9	9.4	
9.5	15.3	43.1		9.5	59.4	40.5		7.5	10.3	54.4	L	9.1	3.7	11.7		9.5	30.0	17.8	
9.1	16.2	9.9		9.5	38 5.4	41.5		9.4	17.4	13.7		7.0	6.7	47.0	K	9.4	37.7	50.8	
9.3	22.2	37.3	B	8.3	12.8	28.1	K	9.3	18.6	9.9		8.6	10.2	48.1	K	9.5	14 3.2	45.1	
9.3	39.6	12.6		9.4	16.6	47.7	B	9.0	20.9	10.7	B	7.5	18.2	8.9	K	9.5	27.1	13.7	
9.3	40.8	15.8		9.3	46.9	35.6		9.3	29.4	56.0		8.6	21.7	41.8	B	9.5	29.1	14.5	
9.0	52.3	2.5	K	9.3	39 5.7	38.4		9.4	32.3	24.0		7.8	3 14.0	5.5	B	9.0	36.9	3.5	K
9.3	52.9	33.4		9.3	7.7	35.6	B	9.4	49.6	20.3		9.5	19.1	48.4		9.4	47.5	0.7	
9.5	26 4.8	18.7		9.4	10.2	55 3		9.4	52 7.1	42.3		9.3	45.6	15.8		9.5	49.3	46.1	
8.8	10.3	42.4		9.5	15.6	37.9		9.5	10.0	53.2		9.0	58.8	40.9		9.4	52.4	33.9	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	17ʰ	+25°			17ʰ	+25°			17ʰ	+25°			17ʰ–18ʰ	+25°			18ʰ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.8	1 16.3	5.8	K	9.3	19 50.9	40.4		9.4	34 40.3	3.0		7.8	49 40.2	8.8	K	9.5	3 14.9	51.2	
9.4	19.1	56.0		9.5	59.6	16.7		8.7	44.5	25.9	L	9.0	40.4	18.0		9.4	4 15.6	11.4	
9.3	57.8	34.9	K	8.7	20 12.7	8.2	K	9.5	51.7	55.2		9.1	50.2	15.3	K	8.5	20.9	5.4	B
9.5	2 20.7	35.3		9.1	15.5	45.1		9.0	35 17.0	14.3	K	9.1	50 8.4	9.1		9.4	24.0	13.4	
9.2	3 32.7	53.9	K	9.5	33.4	31.5		9.5	38.5	25.0		8.4	10.1	0.8	K	9.3	29.7	20.8	
9.4	4 12.7	50.6	B	9.5	58.0	59.1		9.5	56.7	11.5		9.3	29.5	27.0		9.4	32.5	2.7	
9.5	36.4	46.0		9.5	59.9	20.6		8.2	36 14.5	30.9	K	9.5	43.4	54.7	B	9.0	36.9	53.7	
9.4	36.5	6.0		9.4	21 3.5	48.3		7.8	36.5	52.6	K	9.3	49.2	28.7		9.5	41.0	41.7	B
9.5	5 16.4	27.7		9.4	29.9	14.7	B	9.3	43.8	9.9		9.0	57.3	34.4		9.3	46.8	30.7	
9.5	17.2	56.7		9.5	57.3	58.9		9.3	52.2	30.8	B	8.5	58.7	14.4	K	9.3	58.9	55.9	
9.5	34.6	59.0		9.5	22 37.7	45.2		9.5	37 38.5	40.2		9.0	59.2	53.2		9.5	5 21.5	4.5	
8.4	6 11.7	26.0	K	9.5	51.9	24.0		9.5	38 40.0	59.0		9.0	51 25.7	12.6	K	8.3	27.2	17.2	K
9.4	26.4	39.1		9.1	23 19.0	43.2		8.7	48.0	4.8	L	9.2	44.2	26.7	K	7.2	38.8	31.7	K
9.5	7 7.4	29.1		8.7	41.9	4.5	K	9.5	39 19.0	59.4		9.5	56.0	9.6		9.5	42.9	58.3	
7.8	11.8	10.1	K	8.7	24 1.3	11.8	K	9.0	22.0	11.9		9.5	52 44.1	50.1		8.5	51.3	20.8	K
9.5	53.7	4.0		9.5	20.6	13.2		9.5	24.1	6.3		8.3	44.1	1.5	L	9.1	6 18.0	26.7	
9.1	8 17.7	12.3		9.5	28.1	5.8		9.2	40.0	46.8		9.5	56.0	53.0		9.5	27.9	58.3	
9.1	19.8	20.9		9.5	47.0	31.9		9.5	47.6	5.2		9.5	53 28.5	14.9		9.3	28.3	6.4	
9.2	35.6	8.7		9.3	25 13.4	39.7		9.5	40 2.2	56.0		8.8	57.8	0.7		9.4	34.6	11.1	
9.5	52.9	31.2		9.4	53.4	20.7	B	8.8	26.5	32.0	K	9.4	54 0.6	33.9		9.3	56.5	3.4	
3.0	9 6.6	1.0	K	9.2	26 12.8	39.3	K	9.5	28.7	59.7		9.4	13.5	55.1		8.0	7 0.3	36.8	B
9.3	14.0	11.1		9.4	22.9	6.7	B	9.0	45.7	15.5	K	8.8	46.0	54.6		9.3	1.3	23.5	
9.5	37.4	11.9		8.2	36.0	50.8	L	9.2	46.4	6.9		9.3	55 21.8	58.5		8.0	11.6	15.2	B
9.2	40.8	6.2	K	8.7	39.8	40.0	B	7.0	49.2	49.4	K	7.2	41.0	29.8	L	8.3	50.5	33.0	B
9.4	48.0	59.0		9.5	40.7	7.7		9.1	41 17.5	34.0	K	9.5	42.5	3.8		9.0	8 16.3	16.1	
9.0	52.0	59.9	B	9.5	56.3	31.8		9.5	32.0	17.7	B	9.5	47.7	8.3		9.2	23.7	8.4	
9.4	10 5.2	25.9	B	9.1	27 4.9	15.5		9.5	51.0	38.9		9.5	48.2	18.8		9.5	44.1	42.2	
9.0	8.1	44.8	K	9.5	33.5	59.6	B	8.9	59.7	28.9	K	9.2	56 3.0	5.9		9.5	50.8	8.6	
9.0	34.7	35.3	K	9.3	33.7	17.1		9.5	42 0.0	51.5		9.0	5.0	51.0		9.5	55.7	1.2	
9.5	59.8	20.2		9.1	41.9	5.1	K	9.1	20.5	26.5	K	8.8	6.8	0.6	K	9.5	9 22.3	57.9	B
8.9	11 24.2	11.4		9.3	42.0	51.2		9.3	38.1	5.1	K	8.8	24.7	38.4		9.5	30.5	54.4	
8.5	25.8	33.1	K	9.2	43.0	48.4		9.5	39.7	23.7		9.0	25.2	47.3		9.3	36.3	10.4	
9.2	48.8	18.4		9.2	43.1	18.9	B	5.7	56.5	41.0	K	9.5	45.4	55.6		9.1	42.0	18.3	
9.5	49.5	39.4		9.4	57.0	41.6		9.1	43 2.6	14.2		9.0	57 13.2	10.7		9.4	43.8	15.3	
9.5	12 3.3	5.9		9.5	28 2.9	59.4	B	9.2	37.4	46.7	K	8.5	17.2	22.2	K	8.2	54.0	44.7	L
9.3	4.7	33.8	K	8.2	13.3	31.0	K	9.5	44 17.7	47.4		9.2	47.8	59.2		9.5	10 9.3	43.0	
9.1	6.4	45.4	B	9.5	30.3	26.6		7.0	21.6	20.1	L	9.5	56.0	0.9		9.5	15.7	32.5	
9.5	12.5	15.5	B	9.3	34.5	33.7		9.0	27.3	7.9	K	9.4	58 0.8	58.3		9.5	51.1	39.8	
7.2	36.4	57.4	K	9.5	29 2.4	59.8		9.5	45 43.8	15.4		9.3	2.0	20.1	B	9.5	11 9.4	29.7	
9.4	13 16.7	26.7		9.1	18.5	26.2	K	8.9	43.9	7.9	K	8.8	16.1	20.5	B	9.3	22.0	40.8	
9.5	23.7	30.9		8.8	22.2	45.7	K	9.5	46.8	34.2		9.3	18.5	7.8	B	8.5	12 24.7	15.9	K
9.2	27.0	3.4		9.1	23.0	51.9		9.2	57.0	31.8		9.0	43.2	20.1	K	9.5	32.4	53.3	
9.5	32.9	20.5		9.3	29.5	34.1		9.3	46 23.4	4.7		9.0	59 20.4	51.8	K	9.5	35.5	42.8	
9.5	45.0	35.0	B	9.1	33.0	41.6		7.8	29.2	1.4	K	9.5	22.3	59.6		9.2	48.0	53.8	
8.9	14 10.0	47.7	K	9.4	35.5	59.5		8.5	40.5	37.0		9.5	38.2	25.1		8.7	51.6	23.2	K
6.0	17.1	40.5	K	9.5	30 19.2	9.0		9.4	49.7	55.6		8.5	0 5.4	33.9	L	9.2	13 1.5	15.3	
9.5	25.0	48.1		9.2	24.5	49.8	K	9.5	47 15.4	42.5		8.1	5.9	40.4	K	9.5	24.4	52.6	
9.5	49.7	9.5		7.4	32.0	42.6	K	7.9	24.0	1.6	B	9.5	20.0	22.0		9.5	29.2	20.0	
8.6	15 19.9	52.1	K	9.2	58.1	8.5		9.3	44.1	23.6		9.5	25.9	11.8		9.5	33.0	55.1	B
8.9	16 9.0	34.2		9.3	31 30.0	24.7	K	9.4	48.6	27.6		8.4	29.0	20.3	K	9.5	48.3	20.0	
9.5	12.1	59.0		9.4	40.5	24.1		9.5	56.4	16.4		9.3	33.9	46.7		9.0	51.8	43.2	
7.7	31.0	1.6	K	9.5	43.0	38.8		9.2	48 22.0	30.8		9.5	1 3.5	54.9		9.5	14 12.1	34.1	
9.3	17 13.5	33.1	K	8.2	32 32.4	36.2	B	9.4	36.7	26.8		9.3	9.3	41.0		8.2	13.3	28.2	K
8.3	15.0	54.1	L	9.0	55.5	23.4	K	8.8	39.3	28.0	B	9.5	28.7	4.0		9.5	32.5	36.3	
9.5	46.4	25.3		8.5	33 23.0	24.7	K	8.5	50.4	4.7	K	9.0	32.0	21.2	K	9.5	34.6	50.6	
9.5	52.7	47.3		8.7	42.1	4.3	K	8.6	59.7	39.4		9.5	40.5	39.8		9.5	40.0	47.9	
9.5	18 6.4	41.5		9.5	47.2	14.5		9.5	49 6.8	10.8		9.4	45.8	25.0	B	9.4	44.3	42.0	
9.4	45.6	43.4	B	9.4	34 5.0	47.4	B	8.9	16.8	47.3	B	8.0	2 14.3	10.2	P	9.5	15 0.9	17.5	
9.2	19 5.8	19.2		8.7	17.6	10.2	K	8.0	30.1	17.4	K	9.4	51.4	48.8		9.4	2.0	33.1	
9.0	25.7	21.9		9.4	35.5	16.9		9.1	33.2	38.0		8.8	59.0	15.1		9.2	29.5	37.5	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	18ᵘ	+25°			18ᵘ	+25°			18ᵘ	+25°			18ᵘ—19ᵘ	+25°			19ᵘ	+25°	
m				m				m				m				m			
9.0	15 39.3	59.3	K	9.3	26 19.1	17.6	B	9.4	39 27.4	21.0		9.2	52 16.7	7.3		8.7	4 17.7	49.9	
9.4	16 13.9	57.8		9.5	35.3	7.4		9.5	48.1	25.2		9.0	17.3	9.8	K	8.8	22.6	16.0	K
9.5	36.7	37.8		9.1	37.2	38.1		8.0	40 41.5	23.2	K	7.9	34.3	3.2	K	9.5	33.2	22.5	
9.5	54.8	16.8	B	7.5	41.0	23.3	K	9.4	43.0	55.1		9.0	36.2	41.6		9.5	55.5	30.7	
9.5	54.8	58.6	B	9.1	49.2	54.2	K	9.1	41 4.8	53.9	B	8.2	38.5	51.9	L	8.2	5 3.7	9.0	B
9.2	17 10.1	53.6		9.1	58.0	28.3		9.4	5.2	44.2		9.5	38.8	6.6		9.5	31.1	21.1	
9.2	17.9	42.6		9.4	27 14.4	13.5		9.4	17.5	54.9		8.5	47.8	16.0		9.2	42.8	3.5	
9.3	29.7	3.6		9.2	24.1	45.3		9.4	42 20.8	16.6		9.5	53 8.3	37.6		8.8	6 26.9	30.4	
8.5	31.5	55.5	L	9.2	50.5	56.1	K	9.5	25.2	2.5		9.5	9.0	23.3		9.3	31.7	24.0	
8.7	41.3	29.4	K	9.1	28 3.0	58.8	K	8.3	26.3	53.2		9.5	25.9	28.4		9.5	41.3	45.2	
9.5	55.3	54.6		9.0	15.5	7.7	K	9.0	27.0	34.6	K	9.4	34.5	9.9		9.4	42.5	2.3	
9.2	18 3.0	19.0	B	9.5	16.7	18.1		9.3	43 16.3	42.3		9.3	54 11.4	55.3		9.5	7 2.0	51.9	
9.5	5.1	14.5		9.5	25.8	55.4		8.7	34.8	24.8		9.3	15.9	48.1	B	9.5	27.7	5.4	
9.3	9.2	59.6		9.3	40.0	24.8		9.5	42.4	5.8		9.0	23.0	36.3		9.2	38.1	0.6	
8.8	35.3	26.5	K	9.4	54.3	8.2		9.5	44 8.5	25.0		9.4	44.7	56.6		8.9	44.1	58.1	K
9.5	46.0	7.0		9.5	29 40.1	30.5		9.4	21.1	35.1		9.3	48.3	26.5		9.3	48.9	31.8	
9.1	59.2	30.7		9.3	41.0	47.2		9.4	23.3	33.1		9.3	52.1	13.4		6.9	55.8	30.7	L
9.2	19 23.7	32.4	B	8.1	51.3	14.6	L	9.3	28.3	12.6		9.4	55 10.5	45.5		9.5	8 16.8	1.5	
9.4	25.6	4.0	B	9.0	30 0.9	47.9		9.5	35.8	59.9	B	9.5	28.2	6.0		9.5	30.3	40.5	
8.0	36.9	55.3	K	9.5	1.7	32.4		9.5	57.2	11.6		9.5	29.0	3.4		9.4	46.3	39.1	
9.0	40.3	59.9	K	8.4	4.3	35.3	L	9.4	57.8	59.8		9.4	34.3	9.9		9.0	51.9	32.7	R
9.4	20 13.7	57.0		9.5	49.6	35.9		9.1	45 5.5	52.1		9.5	38.6	48.9		8.9	9 3.0	0.2	
9.5	14.2	28.5		9.4	31 7.7	3.5		9.5	37.6	0.2		8.8	58.5	33.1		9.5	8.7	42.9	
9.0	22.9	8.4		9.5	15.6	1.1		9.2	43.4	32.1		9.2	56 15.4	6.2	B	9.0	22.6	12.2	K
8.7	23.3	51.1	B	9.1	31.2	0.1	K	9.5	45.5	4.2		9.4	22.5	10.7		9.1	26.4	27.0	
9.5	30.2	34.6	B	9.4	34.9	20.3		9.2	46.0	9.1	K	9.5	46.9	17.3		9.5	29.1	56.4	
8.8	52.0	53.7		9.4	44.8	49.9		9.5	55.8	37.3		9.5	50.3	38.1		9.2	34.4	30.4	R
8.5	21 7.1	47.1		9.4	32 4.1	9.1		9.5	46 5.7	13.3		8.3	57 13.2	4.8	K	8.8	41.5	28.6	
8.9	9.8	49.4		9.4	22.6	2.8		9.3	17.9	38.1		8.9	13.7	48.2	S	9.3	10 4.3	43.7	
9.0	13.0	46.0		7.4	30.3	8.4	K	7.7	21.3	50.9	L	7.3	22.5	36.8	K	8.7	18.2	45.5	
9.5	16.1	3.4		9.2	45.3	7.9	K	9.0	38.7	50.5	B	8.0	30.5	50.4	K	9.2	34.1	12.3	K
9.2	22.2	44.2		9.5	33 16.2	0.9		9.2	39.3	51.2		9.0	52.8	49.4	K	8.9	38.2	24.9	K
9.1	40.4	3.4		9.4	25.3	28.4		9.5	47 18.0	1.5		8.8	58 14.2	13.9		9.5	38.2	58.0	
9.4	42.3	42.9		8.5	44.1	45.0		7.7	23.6	11.9	K	9.0	41.4	28.2		9.3	51.7	49.8	
8.5	52.3	30.3	R	9.0	58.3	27.3		8.4	30.5	42.3	K	8.2	47.4	33.6	L	9.5	51.8	34.4	
9.5	22 34.4	40.5		9.4	34 0.5	38.6		9.1	44.6	32.9	B	9.5	52.0	39.7		9.5	11 9.2	50.3	
9.1	23 7.9	23.2	R	9.5	6.9	53.2		9.5	55.5	29.4		7.6	59 7.3	37.3	L	9.5	12.0	21.0	
8.9	20.3	50.9	K	9.5	42.7	59.8	B	9.5	48 11.2	4.6		9.5	17.5	15.6		8.9	13.9	54.3	K
9.2	39.6	9.4		9.2	53.0	18.6	K	9.5	14.2	0.1		7.5	25.4	42.3	L	8.5	46.5	35.5	B
8.7	41.1	40.3	L	9.5	35 23.3	51.2		9.5	54.8	8.9		9.5	43.1	4.6	B	8.0	52.8	6.0	R
7.9	43.5	57.8	K	9.4	56.4	52.1		9.4	49 21.0	6.9		9.5	48.6	57.1		9.5	57.7	52.9	
9.0	58.9	53.4	K	9.5	57.6	6.9		9.5	22.8	50.9		9.5	51.5	0.9		9.5	59.3	15.1	
8.2	24 5.3	40.0	L	9.5	36 28.5	20.7		7.8	46.7	30.4	L	9.2	0 8.3	42.5		9.5	12 0.1	7.2	
9.3	10.3	8.9		9.3	29.7	50.5		9.4	50 20.4	40.7		9.0	38.3	17.8	K	8.7	19.6	55.1	
9.0	21.9	5.4		9.4	32.6	29.0		9.4	27.3	55.1		8.9	1 15.5	2.8		8.9	24.2	53.6	
9.4	31.1	21.0		8.2	51.8	38.0	B	9.4	51.9	41.9	B	8.5	26 3	45.0	K	7.2	31.7	47.8	L
9.0	33.4	12.6		8.8	57.4	15.8		9.0	55.7	55.6		9.2	28.2	0.2		9.5	34.2	53.1	
9.4	25 5.0	0.2		8.5	37 10.1	18.8	L	9.5	51 4.3	11.0		9.2	32.3	31.2		9.5	45.4	20.1	
9.1	7.3	2.7	B	9.1	14.3	47.2		9.4	5.8	17.3		9.4	33.6	26.5		9.5	57.5	25.6	
9.2	11.3	5.3		9.1	35.2	0.2	K	8.8	8.6	57.3	B	9.0	59.2	13.2		9.0	13 19.6	58.4	
8.2	25 13.5	3.5	K	9.5	55.9	29.1		8.2	9.8	48.7	L	9.4	2 1.5	59.1		9.1	24.9	9.4	
9.5	15.3	43.1		9.5	59.4	40.5		7.5	10.3	54.4	L	9.1	3.7	11.7		9.5	30.0	17.8	
9.1	16.2	9.9		9.5	38 5.4	41.5		9.4	17.4	13.7		7.0	6.7	47.0	K	9.4	37.7	50.8	
9.3	22.2	37.3	B	8.3	12.8	28.1	K	9.3	18.6	9.9		8.6	10.2	48.1	K	9.5	14 3.2	45.1	
9.3	39.6	12.6		9.4	16.6	47.7	B	9.0	20.9	10.7	B	7.5	18.2	8.9	K	9.5	27.1	13.7	
9.3	40.8	15.8		9.3	46.9	35.6		9.3	29.4	56.0		8.6	21.7	41.8	B	9.5	29.1	14.5	
9.0	52.3	2.5	K	9.3	39 5.7	38.4		9.4	32.3	24.0		7.8	3 14.0	5.5	B	9.0	36.9	3.5	K
9.3	52.9	33.4		9.3	7.7	35.6	B	9.4	49.6	20.3		9.5	19.1	48.4		9.4	47.5	0.7	
9.5	26 4.8	18.7		9.4	10.2	55 3		9.4	52 7.1	42.3		9.3	45.6	15.8		9.5	49.3	46.1	
8.8	10.3	42.4		9.5	15.6	37.9		9.5	10.0	53.2		9.0	58.8	40.9		9.4	52.4	33.9	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19h	+25°			19h	+25°			19h	+25°			19h	+25°			19h—20h	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	14 54.7	47.9		9.3	25 4.7	31.9		9.2	34 42.9	15.8		9.3	42 53.7	27.9		7.6	51 46.6	54.5	K
7.0	15 29.1	19.9	K	9.5	53.4	53.3		9.0	43.9	10.0	K	9.5	57.6	18.0		9.4	50.8	45.5	
7.5	40.0	18.0	K	9.4	58.3	40.7		9.5	47.2	35.1	B	9.5	43 2.2	53.7		9.5	52.8	52.9	
9.5	44.6	17.6		6.6	26 4.4	17.3	K	9.5	35 14.9	54.6		9.4	10.5	18.9	B	9.0	58.4	6.0	
8.8	50.1	12.0	K	9.5	14.3	15.4		9.4	36 3.1	33.6		9.2	15.7	25.5		9.2	52 3.9	55.0	
9.4	59.9	30.7		9.5	21.0	15.8		9.3	6.4	58.5		8.1	19.0	8.7		9.2	4.1	57.3	
9.5	16 2.2	6.3		9.4	26.7	32.7		9.5	24.2	29.6		8.9	27.4	58.1		9.5	8.8	16.8	
8.9	13.3	43.3		8.8	29.5	7.0	K	8.8	32.5	49.5		9.4	35.3	15.2		8.2	25.1	46.0	
9.3	41.5	2.2		9.5	44.5	8.4		9.4	38.2	28.6		9.4	40.1	14.6		9.3	34.2	42.3	
8.6	46.9	2.6	R	9.5	44.7	7.5		9.5	53.0	54.4		9.5	41.0	23.9		8.3	59.4	36.1	K
5.5	54.7	59.4	K	9.5	59.8	21.5		9.1	37 9.3	21.9		9.1	48.9	51.3		8.3	53 0.8	20.0	
9.2	55.7	11.6	K	8.9	27 17.3	56.8		9.5	30.1	10.4		9.5	52.9	55.6		9.4	6.0	57.3	B
8.6	17 10.8	38.5		9.0	48.8	18.6	K	5.8	41.2	25.5	L	9.5	44 13.7	28.6		9.5	11.2	59.6	
9.2	15.0	18.6		9.5	50.6	39.7		9.4	53.0	34.8		9.4	15.8	21.3		9.4	16.7	45.0	
9.5	50.6	51.8		6.5	28 2.0	44.6	K	9.5	54.3	18.2		9.2	25.4	53.3		8.3	20.8	17.8	K
9.5	50.7	27.0		7.0	2.7	29.6	K	9.5	55.0	51.2		9.4	43.5	7.7		9.5	39.7	23.0	
9.5	55.4	58.4		7.3	11.9	2.2	L	9.5	38 0.2	22.5		9.5	57.8	12.4		9.3	55.2	35.9	
9.3	18 13.9	14.8		9.4	14.0	48.8		9.4	13.3	22.4		9.4	45 0.6	34.9		7.0	54 2.5	33.2	K
9.5	39.9	54.5		8.6	23.3	16.2	K	9.3	20.5	6.1		9.5	1.1	31.3		9.1	10.2	32.4	B
9.5	56.2	26.0		9.2	48.2	32.9		8.7	22.1	37.3		9.5	28.0	47.6		6.4	12.3	47.6	K
9.4	56.7	55.8		8.7	50.5	43.2	K	9.5	25.9	52.7		7.4	35.8	51.3	K	9.4	14.5	32.6	B
8.4	19 14.4	11.3		9.3	51.6	19.9		9.4	36.6	38.0		7.7	43.9	52.1	K	9.0	20.9	30.6	K
8.4	17.0	25.5		8.4	29 8.2	43.3	K	9.4	59.0	41.2		9.0	46 16.0	53.6		9.5	27.5	17.8	
8.1	26.2	25.7	B	8.2	11.0	41.2	K	8.7	39 14.6	33.7	K	7.4	18.2	29.4		9.4	51.1	34.8	
9.4	35.7	11.9		9.0	24.1	59.6	K	9.5	15.0	6.6		9.2	19.5	21.6		9.4	57.3	1.4	
8.8	39.0	0.5		9.5	27.9	57.7		8.9	21.0	23.9	K	8.5	20.1	35.5		9.5	55 2.5	27.4	
7.5	42.2	49.1	L	9.3	33.7	4.1		9.0	21.1	38.4		9.3	24.7	27.0		8.7	10.6	17.3	K
9.5	45.5	43.3		9.2	44.3	22.5		9.1	22.9	9.6	K	9.5	35.3	17.4		9.5	13.4	49.9	
9.5	48.2	12.7		7.5	47.7	29.8	K	9.2	24.7	33.6		9.5	47 1.6	31.6		9.3	14.1	20.3	B
9.5	52.7	29.2		9.5	55.5	15.5		9.2	29.6	40.6		9.1	6.5	49.3		9.5	23.8	41.2	
9.1	20 2.5	43.9		8.3	30 1.2	13.7	K	9.4	38.4	47.1		8.9	12.0	49.0		9.1	27.5	27.7	
9.5	12.6	52.3		9.5	47.0	4.0		9.4	39.0	0.7		9.5	20.3	41.1		9.5	56 1.8	41.7	
8.4	30.3	18.7		8.6	31 9.2	6.4	K	9.4	40.6	34.8		9.1	24.6	37.2	K	9.5	2.0	58.9	
8.4	35.4	12.3	K	9.5	11.8	59.2		9.5	55.7	23.8		9.0	25.8	20.8	K	9.4	8.0	13.7	B
9.3	47.8	57.6		8.2	17.2	49.6		9.4	40 9.5	47.5		9.0	26.3	18.0		9.5	40.6	54.8	
9.4	59.4	49.0		8.0	21.8	13.8	K	9.5	15.8	47.1		9.4	41.7	27.2		9.4	42.2	43.0	
9.4	21 2.5	18.6		9.5	41.1	9.0		9.5	23.4	15.9		9.5	48 16.3	21.5		9.4	42.4	55.8	B
9.2	9.2	2.0	R	9.0	52.2	28.3	R	8.9	26.8	31.0	K	8.6	19 9	53.7		9.5	48.5	5.4	
9.2	19.3	20.5		9.5	54.4	14.3		9.5	28.8	27.6		8.8	28.4	51.1		9.1	57.1	54.6	K
9.5	19.8	44.6		7.5	57.0	41.3	K	9.5	33.9	52.9		8.1	52.8	40.6	K	9.4	57 0.2	58.5	
9.5	20.6	27.7		9.2	58.3	36.1		8.9	35.5	42.7	K	9.4	49 11.2	22.0		9.4	0.8	51.7	
9.5	32.9	52.3		9.4	32 20.3	22.1		9.4	40.9	52.1		9.5	13.6	38.9		9.5	45.7	23.2	
8.5	46.6	54.7	K	7.7	30.1	39.1	K	9.2	43.4	48.5		9.2	24.8	59.3		8.8	57.7	52.1	
9.3	47.5	14.4		9.4	40.0	1.2		9.5	41 4.8	42.2		9.0	33.0	40.8	K	9.5	58 1.6	2.2	
9.5	22 13.4	8.2		9.5	53.1	39.8		9.5	7.3	12.5		9.2	35.9	14.8		8.0	5.7	23.2	L
9.5	45.2	53.8		9.4	54.4	19.5		9.5	7.7	9.3		9.0	36.6	15.2		9.5	22.4	59.3	
9.5	45.7	32.1		9.2	33 12.4	56.9		9.5	27.9	10.4		9.5	51.0	45.7		9.5	25.8	41.3	
9.5	52.4	8.4		9.5	13.2	38.0		8.4	37.3	55.6	K	9.5	58.7	32.1		9.2	30.1	55.3	
9.4	57.9	28.3		8.9	23.5	45.0		9.5	38.6	40.7		9.5	50 12.0	58.6		9.4	44.2	31.5	B
9.4	23 29.8	56.3		9.5	33.4	3.9		9.4	40.0	8.4		9.5	14.2	33.9		7.8	49.9	39.5	L
9.5	38.1	6.2		9.4	42.1	53.9		9.4	40.0	7.3		9.4	32.6	37.2		9.5	54.5	2.6	
9.5	41.6	42.5		9.3	45.7	4.6		6.2	44.1	1.5	K	9.0	54.0	50.1	K	9.2	55.5	27.4	
9.4	48.7	28.7		8.6	48.4	11.1	K	9.4	47.2	27.5		9.5	51 0.1	9.0		8.4	59 6 8	2.9	K
9.4	51.8	5.5		8.9	34 10.3	51.5		9.5	42 10.5	43.4		7.9	7.7	6.2	K	9.5	11.5	27.5	
8.5	24 3.1	41.8	K	8.9	16.0	3.6	K	9.5	12.0	12.7		9.5	8.8	19.9		9.4	15.3	2.4	B
9.5	5.5	43.5		9.5	22.4	15.5		9.4	32.3	22.6		8.7	14.5	42.7	K	9.5	23.0	0.0	
9.4	22.7	23.9		7.7	27.5	59.1	K	9.1	32.9	35.2	K	9.5	28.4	46.8		7.8	43.9	11.1	K
9.5	40.3	19.3		9.1	27.5	18.8	R	9.1	40.7	27.0		9.5	43.2	28.5		9.5	57.5	28.4	
9.5	48.5	25.1		9.2	36.5	44.3		9.4	43.6	35.8		9.4	44.4	32.5		8.2	0 4.2	2.8	K
9.4	58.6	31.3		9.5	39.7	3.1		9.5	50.8	7.6		7.9	45.6	59.3	K	9.5	4.5	47.9	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20h	+25°			20h	+25°			20h	+25°			20h	+25°			20h	+25°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.3	0	36.3	30.9	9.4	8	37.0	38.0	9.5	17	19.6	43.4	7.9	27	25.8	22.7	L	9.5	36	15.6	54.1	
9.2		37.3	50.7	9.4		52.4	30.2	B	9.0		21.3	23.0		9.5		35.6	34.8		9.1		21.0	46.4	
8.5		39.6	16.4	K	9.1	9	2.2	52.1		9.3		43.0	18.2	B	9.4		44.8	31.4		9.4		33.5	20.4	B
9.4		50.3	12.6		9.5		3.6	44.5		9.5		49.8	18.1	B	8.5		45.5	7.7	K	9.3		53.6	44.7	
8.2	1	9.5	46.4	K	5.2		7.3	9.0	B	9.5		57.1	6.4		9.5		51.6	12.8		9.2	37	1.0	8.9	
9.4		15.6	26.4		9.3		14.7	15.1		8.2	18	26.6	26.9	K	9.5		52.0	19.2		9.5		2.6	44.7	
9.4		21.2	33.4		9.5		26.9	11.4		9.4		36.7	23.7		9.3		52.8	23.0	B	7.5		4.5	18.5	L
9.5		26.1	35.3		9.4		30.4	9.3	B	7.5		37.9	39.5	K	9.2		54.5	7.9	K	7.9		9.7	5.2	L
9.5		33.4	59.3		9.0		32.6	26.7		9.5		58.6	4.4	B	8.9	28	30.8	59.3		9.5		33.4	50.2	
9.5		54.2	43.5		8.5		38.4	49.4		9.4	19	0.0	7.9		9.4		34.8	42.0		8.9		34.1	16.8	
8.8	2	1.4	29.9		9.5		47.3	28.8	B	8.3		2.7	14.6		9.4		43.6	6.2	R	9.5		47.1	17.3	
9.2		5.9	27.3	B	9.3	10	14.3	0.4		9.4		15.6	59.4		9.3	29	16.3	8.5	B	9.1		57.6	6.2	
8.1		14.2	55.9	K	8.0		19.7	25.8	B	8.4		33.5	47.2		9.5		17.7	43.3		9.0	38	1.3	22.5	
9.1		17.8	3.2		9.4		20.8	24.6		8.5		48.2	34.1	K	9.2		20.4	4.5		9.4		8.1	26.6	B
8.8		31.9	30.6		9.5		28.5	47.4		9.5		57.9	38.8		9.5		22.0	12.4		9.5		14.8	42.2	
7.8		38.3	51.6	L	9.2		32.6	6.4		9.5	20	9.8	22.2		9.2		25.2	23.5		9.5		23.1	54.4	
9.5		43.6	59.2		9.4		39.7	14.6		8.2		31.8	1.0	K	9.5		42.8	3.0		9.3		23.7	1.0	
9.4		44.3	23.0		8.5		48.2	56.5		9.0		35.6	44.7		9.5		53.8	11.6		9.5		26.3	51.2	
9.5	3	11.0	53.2	B	9.3		54.2	24.7		8.9		46.7	3.9		7.2		55.3	22.7	K	9.5		29.0	37.9	
9.4		14.5	40.3	B	8.7		57.6	45.0	K	9.4		47.6	7.4		9.0		57.0	37.6		9.3		33.9	20.0	
9.0		17.3	46.9		9.4		57.7	15.1		9.5		47.7	15.1		8.8	30	18.1	54.1		8.8		50.6	7.2	K
9.5		21.7	37.5	B	9.5	11	17.3	42.0		8.7		58.4	10.2	K	6.0		53.7	57.5	K	9.1		51.2	2.0	
9.5		37.5	35.0		9.4		21.8	58.7	B	9.5	21	0.1	36.1		9.5	31	1.3	42.3		9.0		56.6	26.7	
7.8		48.6	6.9	K	8.3		28.6	55.8	K	9.4		13.2	2.0		8.9		7.2	52.7		8.0	39	15.1	34.8	K
9.5		53.0	17.5		9.5		49.9	39.8		9.5		27.7	23.2		8.9		24.4	30.4	K	9.5		23.4	21.0	
9.3		59.3	51.8		9.0		50.2	2.6		9.5		31.8	12.9		8.7		46.7	48.7	K	9.4		37.8	12.4	
9.2	4	5.9	10.6	K	9.4		50.3	0.4		7.8		38.9	39.8	B	9.5		46.8	2.7		9.3		49.9	11.6	
9.5		11.3	51.9		8.5	12	5.3	3.7	K	9.3		43.5	27.7		8.7	32	7.2	5.2	K	9.4		58.5	17.6	
9.4		17.0	27.2		7.3		7.3	12.1	K	9.5		44.2	1.9		9.5		9.8	4.0		9.2		59.8	0.5	
9.4		19.6	5.7	B	8.4		11.9	9.9	K	9.5	22	15.9	45.1		8.1		30.0	2.5	K	9.5	40	25.8	11.9	
9.2		21.0	17.5		9.5		38.6	15.4		9.3		22.6	25.7		9.5		51.9	53.4		9.0		28.4	49.9	
9.5		31.4	47.7	B	9.5		39.5	28.9		9.3		42.5	27.4		7.3	33	8.7	33.9	K	9.5		31.0	37.3	
9.5		33 4	42.9	B	8.2		59.1	39.4	B	9.3		53.7	13.8		9.5		9.4	23.6	B	9.4		41.2	33.8	
9.5		33.4	51.6		9.0	13	3.6	26.7		9.0	23	3.8	12.6		9.5		10.5	9.2		9.5	41	32.8	38.9	B
9.4		34.5	18.1		9.5		17.5	27.7		9.3		6.9	21.0		9.2		13.6	23.3	B	7.1		33.0	38.9	L
9.5		47.2	1.3		9.4	14	16.8	13.4		9.2		21.5	28.9		8.7		28.0	47.9	L	9.4		51.0	47.2	S
9.4		49.9	13.1		9.2		18.2	9.2		9.2		32.3	22.7		9.4		37.8	22.0		9.5		56.9	49.6	
8.9	5	10.7	43.0	K	8.9		19.5	41.6		8.8		32.6	59.7		8.8		47.2	50.2	B	8.0	42	0.3	51.9	K
9.5		11.4	3.1		9.5		20.4	9.6	B	9.5		36.0	11.4	B	9.5		56.3	41.5		9.1		7.0	4.8	
8.6		15.6	1.4	K	9.3		25.3	6.0		8.9		40.4	55.7	B	9.5		56.5	57.3		9.4		8.0	46.5	B
9.0		19.2	59.2	B	9.4		31.6	45.2		9.3		41.5	28.9		9.5		57.9	50.6	B	9.3		17.8	5.0	
9.4		25.1	54.1		9.2		40.8	47.3		8.9		42.0	54.9	B	9.5		58.6	25.7		9.5		32.5	49.0	
9.5		27.7	5.0		9.5		40.9	20.5		9.3		52.6	34.8		8.9	34	0.3	31.6	K	8.3		42.6	8.0	K
9.0		27.8	57.6	B	9.3		43.7	42.1	B	9.5	24	7.8	50.6		8.5		4.6	16.5	K	8.1		48.1	8.0	K
9.0		48.7	59.0	B	9.0		56.9	10.4		8.8		35.6	17.1	K	9.5		5.5	2.6		9.4	43	0.0	57.4	
9.0		49.1	56.5	B	9.5	15	7.1	36.3		8.9		45.4	30.1		9.4		9.9	3.7		9.2		25.6	7.5	
9.4		50.4	28.4	B	9.4		22.6	54.6		9.4		51.4	59.9		9.4		14.0	0.9	B	7.7		28.7	13.9	K
9.5	6	13.4	38.8		8.7		33.0	17.6		8.7		53.1	59.7	K	9.4		19.7	5.6		9.4		32.2	2.9	
7.5		25.3	12.8	K	9.1		44.1	16.5		9.4	25	9.5	37.3		7.0		28.2	34.0	K	9.5		37.1	1.2	
8.8		26.7	25.0		9.3		51.3	11.9		8.9		15.6	5.9	B	9.5		31.7	43.4		9.3		45.3	36.1	
9.0		32.8	22.3		9.4		51.5	8.9		9.0		24.2	56.7		9.5		46.6	26.9		8.2		47.6	31.9	L
9.4		33.4	29.7		8.1	16	1.7	52.6	K	6.0		45.4	19.3	L	9.4		50.9	11.5		9.4	44	23.0	47.8	
9.5	7	2.6	6.9		9.4		16.8	42.2		9.5		55.0	11.0	B	9.1	35	4.6	36.6		9.3		24.1	58.0	R
8.8		7.2	5.2		9.2		21.5	27.7		9.5	26	2.2	33.4		9.1		6.9	39.0	K	9.3		26.3	44.5	
9.5		31.3	3.0		7.3		25.4	49.9	K	9.5		30.4	19.3		9.5		17.7	24.9		8.9		29.4	18.1	
9.5		36.0	55.1	B	9.4		44.5	57.3		9.4		44.3	22.5		9.4		42.4	19.8		9.3	45	10.5	1.0	
9.5		37.6	7.4		9.2		56.1	37.7	B	8.9		52.7	4.7	K	9.4		43.4	29.7		9.3		18.3	19.8	
9.0		41.7	13.8		9.3	17	0.3	0.5		9.4	27	7.6	7.7		9.0	36	1.8	50.6		9.5		38.8	43.5	
9.5		48.9	20.8		9.5		3.2	53.6		9.3		15.4	3.7		9.0		7.4	30.4		9.3	46	5.6	59.9	
9.4	8	6.2	54.5	B	9.2		6.4	29.9		8.4		25.4	20.7	L	9.1		11.8	31.6		9.5		9.9	29.5	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	20ᵐ	+25°			20ᵐ—21ᵐ	+25°			21ᵐ	+25°			21ᵐ	+25°			21ᵐ—22ᵐ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.7	46 26.0	59.6	K	9.4	59 19.5	37.9	B	8.8	15 47.7	53.7	K	8.6	32 34.0	38.8	K	9.4	48 19.0	3.3	
9.5	29.8	28.0		9.2	52.4	8.0		8.6	16 1.0	35.0	K	8.3	56.7	56.4	K	9.4	44.8	12.5	
9.1	48.7	56.6		8.3	0 8.0	3.6	K	9.5	19.1	45.8		9.0	33 0.5	23.6		8.7	50.2	14.5	K
9.2	58.6	14.9		9.2	10.4	1.0		9.0	20.0	29.5	B	9.5	3.4	57.0		8.5	49 14.7	43.7	K
9.5	47 8.6	38.0	B	8.1	24.9	57.3	K	9.5	30.0	8.4		9.5	34.5	55.7		9.4	23.5	0.7	
9.5	14.9	57.3		9.5	45.0	55.5		9.5	31.2	15.7		9.0	37.0	20.2	R	9.5	26.4	17.3	
9.4	15.2	31.9	B	9.1	1 20.1	59.2		8.8	57.2	51.3	K	9.5	50.3	49.2		9.1	43.7	53.2	K
9.4	19.8	44.5		9.5	26.5	19.1		9.1	17 1.7	8.9		9.0	51.0	27.5		8.8	44.4	46.5	K
9.4	26.0	32.1	B	9.4	43.0	38.5		9.5	4.8	19.5		9.5	52.5	32.7		8.8	45.2	40.7	
8.6	48 12.2	6.0	K	9.5	59.3	27.0		9.2	47.4	52.1		9.5	34 4.4	0.4		9.0	56.3	30.7	K
9.3	22.1	55.6	B	9.0	2 2.0	42.3		5.0	18 8.7	34.3	K	9.5	24.5	0.8		9.5	50 54.5	53.8	
9.4	23.7	45.8		9.5	17.7	37.8		9.2	16.6	18.5		9.1	37.5	2.9		8.5	51 27.7	50.3	
9.5	29.3	52.8		8.9	3 15.2	56.2	K	7.0	21.0	15.6	L	9.3	55.1	52.5		9.0	55.7	19.3	
9.3	30.8	1.7		9.3	35.5	26.7		9.5	29.8	20.2		9.5	35 15.0	9.1		9.3	52 46.6	55.7	
8.4	46.3	19.8	K	8.5	38.4	41.6	K	9.4	55.0	14.7		9.5	19.5	21.6		9.0	53 4.2	44.5	
9.4	49 8.0	24.8		9.3	4 4.0	42.1	B	9.3	56.9	48.4		9.3	42.9	53.5	B	9.4	17.9	57.2	
9.5	33.2	37.8		8.8	38.5	37.4	K	9.3	19 24.9	57.7	B	9.3	36 7.5	32.6		8.9	19.5	28.0	
8.8	39.6	23.7	K	8.5	5 13.3	44.0	K	9.5	20 44.0	26.0		9.5	43.8	34.6		8.2	54 3.2	46.8	
9.3	52.8	52.6		9.4	29.8	47.4	B	8.7	21 0.7	6.1		9.0	54.7	3.0	B	9.3	22.0	48.6	
9.3	50 47.6	39.3		9.5	32.8	54.4	B	9.0	47.0	36.8		8.3	56.0	22.9	K	9.4	27.3	54.4	
9.2	51 0.8	11.9		8.8	37.3	40.9	K	9.5	47.0	45.7		9.1	56.7	38.6	B	9.5	33.3	55.7	
7.0	20.4	50.7	K	9.2	42.4	47.6	B	6.5	22 14.7	18.7	K	9.2	56.7	49.9	B	8.0	55 5.7	40.7	K
9.4	26.6	55.6		9.4	6 8.3	33.7		7.5	15.0	47.1	K	9.0	37 2.3	20.5		9.0	50.2	29.3	K
9.1	47.7	14.1		8.2	8.7	43.3	K	7.6	16.8	56.7	K	9.3	7.6	53.7		9.3	59.2	14.5	
8.5	55 7	31.7	B	8.8	7 0.0	43.5	K	9.2	28.0	8.0		9.0	10.4	35.1		9.5	56 52.5	1.7	
9.3	52 7.2	45.0		9.1	3.7	11.5		9.2	23 2.3	51.4	B	9.3	29.0	4.5		9.0	58.7	22.1	
9.2	8.2	33.7		9.4	10.0	26.4		8.5	12.5	34.7	K	8.2	35.1	50.8		9.5	57 4.8	47.5	
8.8	9.4	42.3		8.2	12.7	1.9	K	9.5	20.3	49.4		7.8	51.2	38.0	B	9.5	26.0	36.4	
9.5	46.5	49.4	B	9.5	49.2	5.2		8.3	24.5	10.0	K	9.4	55.2	17.5	B	9.0	51.9	57.0	
8.9	49.9	3.0		7.5	50.0	39.2	K	9.5	24 14.5	43.7		9.4	59.3	35.0		8.9	58 3.6	57.3	
9.5	58.5	54.5		9.5	8 24.2	51.0		8.8	21.6	23.0		9.0	38 42.0	16.4		6.2	34.0	59.3	R
9.3	53 8.2	21.3		9.1	48.5	20.6		8.2	29.0	6.4	K	9.5	44.2	58.7		9.0	59 5.8	0.1	K
9.0	54 10.6	58.3		8.3	59.0	15.0	K	9.0	40.8	25.0	K	9.5	39 14.3	59.8		9.1	42.0	53.4	
9.5	34.1	22.8	B	9.5	9 14.5	46.1		9.0	50.4	9.2		8.5	21.5	38.2	K	9.4	42.7	48.2	
9.4	34.2	38.1		9.5	27.5	20.0		9.0	52.5	28.8		9.5	43.0	35.7		8.7	0 16.0	8.3	K
9.5	55 2.4	50.3		9.5	43.0	58.0		9.5	53.8	25.6		8.0	43.7	15.4	K	7.8	20.1	54.7	K
9 5	32.3	59.6		9.5	47.7	27.0		8.7	58.7	49.5		9.0	40 34.5	39.5		8.6	1 0.6	39.3	B
9.0	37.9	51.0		7.2	55.0	45.2	K	8.8	25 14.3	23.4	K	9.5	46.5	5.8	B	9.5	2.4	59.0	
9.3	49.2	54.2		9.5	10 18.3	45.0		9.5	26.8	33.0		9.5	41 30.6	39.2		9.4	13.2	12.8	
9.0	52.4	19.2	B	8.7	25.1	53.7		9.3	46.0	7.4		9.5	33.5	31.3		9.5	17.6	6.6	
9.5	59.4	19.9		9.4	27.9	16.3	B	9.2	58.0	20.2		7.5	42 20.7	2.2	K	9.3	2 43.1	50.1	B
8.0	56 16.5	36.0	K	9.5	37.0	23.0		9.3	26 12.5	13.4		8.9	29.5	50.0	K	9.5	3 25.2	1.3	
7.1	2..8	56.2	K	9.5	40.0	29.5		9.5	21.5	28.1		8.8	45.0	19.1		8.8	57.0	51.7	
8.0	50.5	20.2	K	9.5	12 0.7	37.4	B	9.1	27 1.0	38.5		9.4	48.7	7.6		8.5	4 12.8	6.3	K
9.5	57 10.6	14.8	B	9.5	6.3	36.1		8.2	21.9	15.6	K	9.4	43 8.9	51.0		9.1	29.0	54.9	B
9.2	20.5	25.9		9.5	32.4	3.6		9.5	32.6	57.0		8.8	25.0	19.8	K	8.3	58.2	24.5	K
9.2	23.3	59.6		8.4	33.5	37 8	K	8.5	51.5	43.6		8.3	37.0	12.0	K	9.5	5 10.6	9.1	
8.5	25.4	16.8	K	8.2	36.7	29.1	L	8.6	59.9	27.0	K	9.3	44 51.0	36.0		9.3	15.7	31.0	
9.5	42.5	57.1		9.5	36.9	56.8		9.5	28 23.1	55.1		9.2	51.8	15.3		8.0	18.4	19.0	K
8.2	46.5	47.7	K	9.5	13 9.5	6.7		9.0	26.5	15.0	K	9.2	45 2.0	33.0		9.3	25.1	45.8	B
9.4	52.8	12.0	B	9.5	56.6	54.4		9.4	43.8	30.0		9.3	19.6	12.1		6.8	6 30.9	13.2	K
9.0	55.2	23.1	B	9.5	14 9.1	19.8		8.3	46.0	38.1	L	9.2	25.5	36.8		9.3	7 10.5	55.3	
9.4	58 9.9	16.5		7.7	15.0	37.5	K	9.4	29 3.5	31.5	B	9.5	26.0	49.2		9.5	8 9.7	13.9	
9.4	11.0	48.1		9.1	43.4	9.3		9.3	14.1	41.3	B	9.4	46 9.9	22.3	B	9.3	25.6	58.9	B
9.5	12.8	43.3		9.4	45.8	6.8		8.5	27.8	43.3	L	5.5	28.6	14.5	K	9.5	40.2	27.0	
9.4	14.1	13.0	B	9.5	59.5	53.5		9.3	30.9	57.9		8.5	38.5	3.7	L	8.6	54 4	1.6	K
9.5	35.6	6.7		9.5	15 23.5	56.7		9.5	31 2.5	29.1		8.9	47 17.5	55.7		9.5	9 8.5	49.6	
9.5	59 4.6	39.5	B	9.4	25.2	50.0		9.5	5.5	43.3		9.5	30.6	2.3		9.5	19.7	26.1	
9.3	15.8	43.3	B	8.0	28.7	12.1	K	8.9	25.2	53.5	K	9.5	56.2	35.5		9.3	34.8	2.1	
9.2	19.1	33.4		9.5	41.4	8.2		9.3	54.2	35.1	B	9.4	48 11.6	3.8		8.5	36.7	32.3	K

4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
	22ʰ	+25°			22ʰ	+25°			22ʰ—23ʰ	+25°			23ʰ	+25°			23ʰ	+25°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	9 47.1	52.8		9.2	26 32.2	44.4		9.3	42 25.9	56.6		9.1	1 14.7	55.1		9.5	21 4.7	12.4	
9.5	10 24.5	18.1		8.7	36.2	13.7	B	9.1	43 0.4	3.7		8.8	23.4	45.7	K	9.5	13.8	17.8	
9.4	25.7	22.4	B	9.3	40.4	16.5		9.2	8.1	36.7		9.5	25.1	56.4		9.5	36.2	5.7	
9.3	26.1	6.1		9.5	42.7	36.5		9.3	20.7	29.1		9.5	31.0	25.1		8.8	22 0.7	6.1	K
7.5	41.7	39.6	L	9.3	45.1	56.5		9.4	53.3	48.8		8.0	58.1	31.9	R	8.4	8.2	1.0	K
9.2	48.7	24.1		9.1	27 4.3	50.1		9.5	57.9	56.2		9.5	2 0.9	51.6		9.4	10.6	20.4	
9.5	11 14.3	42.7		8.4	34.4	36.9	K	9.5	44 4.1	6.5		9.4	8.3	11.6		9.0	23.9	28.8	
9.5	39.8	2.5		6.8	46.9	50.8	K	6.7	30.8	37.4	K	9.4	50.4	9.3		9.5	24.9	29.2	
7.7	12 0.9	2.7	K	9.4	28 20.0	37.4	B	9.5	42.3	47.1		9.5	3 16.6	58.3		9.5	26.7	58.6	
9.3	34.0	23.2		9.5	24.9	39.6		9.0	42.4	36.5		7.2	38.6	45.4	K	9.4	45.8	18.2	
9.5	59.0	26.9		8.5	27.7	15.9	K	9.5	45 3.8	24.4		8.0	44.9	35.0	L	8.5	24 0.6	40.1	K
9.3	14 7.4	57.4		9.3	47.2	18.0		9.5	18.7	56.0		8.9	55.3	39.7	B	9.2	22.8	12.1	K
9.5	9.0	20.3		9.3	29 12.8	9.0		9.5	46 21.5	55.8		9.3	4 25.9	51.6	R	9.0	38.5	7.9	K
9.5	27.9	28.6		8.5	44.2	50.1	B	9.5	23.9	51.3		9.0	47.7	14.8	K	9.5	25 2.2	12.5	
9.5	15 22.8	37.9		9.0	46.1	34.7		9.4	45.7	53.3	B	8.4	5 19.0	4.0	K	7.4	3.9	45.1	L
9.5	46.6	23.5		8.9	30 21.2	58.6		9.5	46.6	11.8		9.0	55.8	46.1		9.0	7.3	44.1	B
9.5	16 16.0	54.0		8.6	35.0	4.7	K	9.0	47 17.8	8.8		9.5	6 4.4	23.4		7.4	13.9	42.9	L
9.5	45.7	49.7		9.4	37.7	9.5		9.4	51.3	52.6		9.2	25.9	54.1	B	9.1	14.8	13.5	B
9.2	51.8	56.2		8.0	55.7	40.6	K	9.2	56.4	0.4	K	9.4	28.8	32.7		9.5	57.1	38.5	
8.8	17 1.4	16.4	K	8.8	58.7	19.7		9.5	48 9.3	25.4		9.5	46.4	57.1		9.3	26 2.5	15.5	
9.2	4.8	59.8	B	9.5	31 24.2	55.3		9.0	16.1	20.5		9.3	7 8.9	51.3		8.8	32.4	38.1	
9.4	45.8	26.2		9.5	32 18.7	24.1		9.5	31.2	19.7		9.4	29.5	7.5		9.4	48.2	55.7	
8.5	52.2	59.3	K	8.8	32.0	16.6		9.1	32.8	50.9		8.5	45.1	32.0		9.5	49.0	14.1	
9.5	55.7	25.9		9.5	33.2	54.5		9.5	48.8	35.1		9.0	8 7.8	13.2		9.4	57.3	54.6	
9.5	59.9	6.0		8.8	42.1	28.0	R	9.5	49 1.3	1.0		8.0	14.5	4.5	L	9.3	27 7.2	56.3	
7.7	18 17.6	52.2	K	9.1	33 3.6	8.6	K	9.5	46.3	50.7		9.5	25.7	38.9		9.5	12.5	9.2	
9.4	20.2	5.6	B	8.0	48.6	59.5	K	9.0	53.6	26.5		8.6	9 17.7	25.4	R	8.6	13.0	54.9	K
9.3	19 13.7	52.4		9.4	34 31.3	36.5		8.3	58.8	34.6	K	9.5	57.2	7.2		9.3	34.9	58.5	
9.3	16.0	15.9		9.0	40.1	50.6	K	9.5	50 53.6	2.0		9.2	10 1.8	53.0	K	9.3	28 2.9	9.8	B
6.7	17.3	10.4	K	9.4	42.8	28.3		9.5	51 37.4	34.5		9.4	20.1	40.5	B	9.4	6.8	31.3	
9.4	38.9	44.8	B	9.3	54.0	55.6	B	9.5	40.3	52.3		9.5	23.0	41.2		9.3	7.7	2.3	
7.8	39.2	3.1	K	9.5	35 7.4	11.6		9.0	42.5	23.7		9.4	43.8	42.0		9.4	27.4	29.2	
8.5	54.7	46.6	K	9.5	36 7.2	6.3		9.5	52 7.2	27.7	B	9.2	11 10.2	48.5	B	9.5	37.1	0.3	
9.2	20 2.9	55.1		9.5	27.4	20.3	B	8.6	44.0	6.1		9.0	14.3	58.3		9.5	29 9.4	39.6	
9.5	40.5	16.5		8.7	35.0	0.8	K	9.5	49.1	9.4		9.3	39.6	1.4	B	8.0	12.1	28.5	K
9.5	46.3	45.5		8.7	36.6	40.0		9.5	53 9.8	55.4		9.4	59.1	29.3		9.0	58.5	24.0	
9.5	21 1.5	13.8		9.3	46.9	45.8		9.5	14.6	43.0		8.0	12 16.6	42.2	K	9.5	31 6.0	44.7	
9.5	8.2	32.8		9.3	53.5	42.3		9.4	31.9	48.8		9.4	29.7	21.7	B	9.4	9.3	2.8	B
9.5	48.0	24.1		8.7	59.3	53.8	K	9.3	33.7	9.7	R	9.5	34.0	19.0		9.4	28.4	56.7	
9.5	52.4	54.4		9.4	37 14.4	28.2		8.5	47.6	44.3	L	9.4	51.9	24.7		8.1	31.8	8.5	K
8.5	56.9	58.8	K	9.3	16.7	5.5		7.8	54 6.4	59.4	K	9.5	53.4	6.8		9.4	32 24.5	8.7	
9.3	22 0.2	11.3	B	8.7	50.6	56.3	R	9.5	33.8	34.0		8.8	13 38.6	57.0		9.0	43.3	27.5	
9.5	13.8	11.5		9.5	55.2	44.1		9.5	55 12.8	49.2		9.5	40.1	25.1		9.5	33 37.7	14.1	
9.4	15.3	14.1		9.2	38 15.1	16.8		9.5	36.3	34.4		6.3	14 52.0	50.5	K	9.5	34 22.6	5.1	
9.5	21.1	36.2		8.6	36.0	7.4		8 9	39.8	22.0	K	9.5	15 7.2	38.5		9.2	34.1	59.7	
9.2	33.9	3.2		9.4	46.5	43.8		9.5	56 45.4	56.1		9.2	12.9	15.0		9.5	39.8	44.3	
8.5	23 13.1	11.4	K	9.4	39 8.5	26.9	B	9.3	57 30.9	41.1	B	6.6	20.4	7.1	K	8.3	45.9	5.1	K
9.5	36.7	7.5		9.0	18.2	10.8		9.5	49.3	14.8		9.5	47.2	33.0		9.5	35 8.6	53.6	
9.5	24 6.2	0.0		7.8	47.1	15.3	K	9.4	58 10.1	1.3		9.4	56.7	29.5	B	9.5	36 4.7	0.6	
9.5	15.4	52.1		7.6	49.5	2.6	L	7.7	24.8	13.8	K	9.5	16 27.8	5.5		9.4	18.9	54.2	
9.5	30.7	20.7		9.3	40 0.0	30.1		9.5	25.5	17.4	B	9.3	17 3.6	44.7		9.2	31.9	18.2	R
8.5	33.5	30.8		9.4	14.2	23.8		9.5	27.3	49.1		8.8	4.0	51.6	K	9.3	37 2.4	27.2	
9.5	46.2	20.7		8.8	25.7	18.6		9.5	43.0	26.1		9.4	43.4	36.1		9.1	12.4	36.8	
8.8	25 17.6	54.4		9.5	41 13.1	32.6		9.5	56.4	28.1		7.5	18 23.5	24.3	K	9.5	29.7	12.3	
9.4	18.0	30.0		8.3	14.8	9.3	K	9.5	59.6	52.5		9.4	19 3.7	54.7		9.5	42.8	55.7	
9.5	26.6	3.5		9.5	17.1	7.0		9.5	59 6.9	34.4		9.2	12.9	45.9	B	8.8	38 7.5	12.4	
9.3	44.2	24.8		9.4	47.6	20.8		9.5	9.8	28.6		9.5	58.7	16.5		9.0	19.4	19.2	
9.5	48.5	52.3		8.0	49.5	13.2	K	9.4	18.5	16.1		9.4	20 0.8	26.9		7.3	27.7	31.6	K
8.4	56.2	39.9	B	9.5	54.6	24.1	B	9.5	56.4	30.9		9.5	9.4	28.6		9.5	52.1	58.8	
9.4	26 18.4	54.1		7.5	42 15.6	43.9	K	9.4	1 5.5	6.4		8.7	21 1.4	6.8	K	9.0	39 9.0	49.3	

5001—5015				5016—5030				5031—5045				5046—5060				5061—5073			
	23ʰ		+25°		23ʰ		+25°		23ʰ		+25°		23ʰ		+25°		23ʰ		+25°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.8	39	20.4	31.3		9.4	42	36.7	15.5	9.5	45	25.5	38.8	9.2	49	57.6	23.3	9.3	54	43.4	13.8	
9.0		40.0	4.6	K	8.5	43	1.2	31.7	9.5		30.8	52.6	9.4	50	13.4	32.0	B	9.3	56	4.5	30.8	
9.1		48.8	45.7		9.5		3.8	22.0	9.5		38.1	41.6	9.4		36.2	34.2		9.5		9.4	45.8	
8.5	40	3.7	27.1	L	9.5		15.0	11.0	7.5		45.5	11.6	K	9.4	51	11.1	23.0		9.5		26.8	49.3	
7.5		5.1	20.6	K	9.5		21.3	14.1	9.2		49.6	53.7		8.3		28.6	49.9	K	9.5		39.4	52.1	
9.1		7.2	29.6		9.5		51.2	45.5	9.3	46	6.1	45.0		8.5		29.7	16.4		9.5		58.9	53.8	
9.5		25.0	17.5		9.4		53.5	1.2	9.5	47	0.8	1.0		9.3		39.9	10.6		9.3	57	24.8	6.2	
9.4	41	2.1	11.7		8.9		53.6	24.8	9.5		1.0	15.5		9.5		47.5	53.3		6.2		28.7	50.7	K
8.9		13.4	46.5		9.5	44	30.6	59.8	9.5		6.1	7.4		9.3	52	41.0	5.6		8.7		31.8	54.3	K
9.3		24.7	11.0		9.5		34.7	16.2	9.5		12.4	46.1		7.8	53	6.1	2.4	K	9.5	58	17.5	44.6	
9.5		34.8	48.7		9.5		38.8	18.8	9.3		31.3	15.8	B	9.4		15.2	56.1		9.5	59	24.5	19.5	B
8.0		36.1	31.2		9.4		49.3	52.5	6.3	48	1.0	9.0	K	9.5		39.6	49.1		9.5		28.1	2.8	B
9.5		36.4	54.0		9.4		49.9	46.5	B	9.5		18.6	1.4		8.5	54	26.9	18.9		7.2		55.6	39.4	K
9.0		47.1	15.5	B	9.2		56.1	11.3		9.5		22.8	31.5		9.3		27.6	34.5						
8.3	42	32.4	20.8	R	9.2	45	5.7	33.0		9.5		25.3	44.6		9.5		34.8	56.5						

Zone +26°

1—20				21—40				41—60				61—80				81—100			
	0ʰ		+26°		0ʰ		+26°		0ʰ		+26°		0ʰ		+26°		0ʰ		+26°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.3	1	30.0	1.8		9.3	7	33.7	47.3	9.5	14	19.9	55.1	B	9.1	20	25.3	15.9		9.5	26	4.9	20.2	B
9.4	2	9.2	28.4		8.6		39.4	48.0	8.1		26.7	23.4	K	9.5		58.0	28.0		9.4		9.3	7.0	B
9.5		39.0	53.5		6.5		42.2	28.0	K	8.7		48.3	10.3		9.5	21	13.2	2.3		9.5		14.8	26.2	
9.3		42.6	57.1		9.5	8	26.8	42.8		9.5	15	23.5	47.6		9.3		30.2	47.6		9.3		40.3	25.7	
9.1	3	53.3	24.5	K	9.4		35.2	3.9		9.4		44.5	48.0		8.3		45.7	4.2	K	9.0		58.3	21.3	
7.9	4	17.2	42.8	K	9.4	9	14.7	44.7	B	9.4		47.4	22.9		9.5	22	16.9	14.8		9.2	27	2.0	2.7	
8.0		19.7	23.5	K	9.2		44.5	38.3		9.1		50.4	18.4	B	9.5		31.8	16.0		9.3		55.4	52.7	
8.5		29.3	16.7	K	9.5	10	2.9	59.8		9.5	16	9.8	12.1		9.5		38.8	2.8		9.0	28	0.6	28.8	K
9.5	5	8.2	4.6		9.5		25.0	33.5		9.4		28.7	3.6		9.5		43.2	34.5		8.9		23.6	48.5	
8.6		16.8	17.6	K	9.5		30.0	18.6		9.4		47.3	19.7		9.3	23	48.3	55.2		8.8		36.7	45.7	
9.5		17.9	38.7		9.4		31.3	36.3		9.4		52.0	3.6		9.1	24	7.5	22.6		6.5		42.2	27.4	K
9.5		32.3	34.2		9.5	12	8.3	42.1		9.2		56.6	34.1		8.4		23.1	50.9	R	8.0	29	4.6	14.4	K
6.5		55.8	10.4	K	9.4		42.4	23.1		9.5	18	43.3	37.6		9.5		36.5	31.9	B	8.6		39.4	29.5	K
9.0		58.9	14.8	K	9.5		58.5	57.7		9.5		45.8	51.1		8.5		41.0	53.8		8.4	30	50.9	45.6	
9.5	6	7.2	4.5		9.5	13	16.2	48.0		9.5	19	3.1	13.1		9.5		48.9	58.0		8.7	31	12.0	54.7	
9.2		34.4	33.5		9.5		26.3	26.3		9.0		6.2	13.0	K	6.8		57.5	46.2	K	8.5		40.3	41.8	
9.5		41.2	40.3		8.8		32.5	10.0	K	8.2		13.7	22.8	K	9.5	25	5.0	53.1		9.5	32	10.6	36.0	
9.2	7	5.3	13.5		9.2		40.8	41.7	B	9.5		22.8	5.6		9.1		42.8	19.5		9.5		35.7	42.6	
9.1		12.8	44.9		8.3		47.6	55.2	L	8.8		29.9	49.2		9.5		54.5	47.5	B	9.5		58.5	55.7	
9.5		33.2	59.6		7.5		58.4	8.7	K	9.3		46.1	6.9		9.5	26	3.9	0.4		9.5	33	7.9	52.0	

101—160				161—220				221—280				281—340				341—400			
	0ᵘ	+26°			0ᵘ—1ᵘ	+26°			1ᵘ	+26°			1ᵘ	+26°			1ᵘ—2ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	33 28.3	50.6		7.5	50 40.3	0.1	R	8.6	13 10.7	3.9	K	8.5	33 31.0	56.8	B	9.5	53 9.1	48.6	
9.5	37.0	32.2		8.8	49.9	5.5		9.5	20.9	35.5		9.5	32.5	38.8		9.5	10.4	11.2	
8.0	34 2.6	23.3	L	7.2	51 13.5	52.7	K	9.2	53.5	57.9		9.5	34 2.0	58.8		9.5	17.4	48.8	B
9.2	9.9	47.0		9.5	52 3.3	14.2		9.5	14 21.8	11.2		9.3	35 30.9	35.7		9.1	54 16.6	53.9	
9.0	11.3	14.0		9.5	43.5	37.1		9.4	28.1	9.8	B	9.4	36 33.5	43.6		9.5	55 1.5	19.5	
9.5	28.1	0.0		9.4	53 0.4	35.5		9.1	15 18.3	39.4		9.0	44.6	10.7		7.5	17.3	47.3	
9.5	38.0	28.8		9.5	46.5	54.0	B	8.5	21.2	53.8	K	9.2	49.9	19.0		8.2	26.4	23.2	
7.2	46.6	50.8	L	9.5	54 11.7	27.5		9.5	37.5	39.7		8.5	37 5.5	41.8		9.5	33.9	25.0	
8.9	50.0	4.7		6.5	44.1	57.9	K	9.5	58.0	23.8		9.4	10.4	8.9		9.3	56 29.1	34.1	
9.5	35 10.5	49.8		8.6	55 19.6	29.5		9.1	16 14.2	33.2		8.4	26.3	23.6	L	9.3	40.7	43.7	
9.0	18.3	18.9		9.1	31.7	18.1		8.5	23.2	49.5		8.9	28.9	13.7	R	9.5	57 28.6	4.5	
8.4	36.6	23.5	B	9.5	40.0	1.3		9.5	17 21.1	57.0		9.4	46.5	50.4		9.5	53.7	43.4	
9.1	54.7	49.8		9.4	56 4.1	43.1		8.5	42.9	6.8	K	9.5	38 6.6	27.1		9.5	56.4	46.1	
9.1	58.3	41.1		9.3	53.4	57.9		9.5	44.6	8.5		9.2	39 13.5	8.5		8.5	58 17.5	9.7	
9.5	36 8.2	21.5		9.0	57 21.0	59.2		9.1	45.5	47.1		9.5	13.9	47.3		9.5	18.8	25.2	
9.5	26.9	23.0		9.4	58 0.0	8.8		9.5	56.8	56.4		9.5	18.4	24.0		9.4	48.7	47.4	B
9.4	45.6	45.0		9.5	6.1	58.7		9.5	18 36.8	56.0	B	9.2	19.9	49.6	B	7.0	59 4.9	33.4	K
9.2	37 15.8	49.7		9.5	14.4	30.9		8.0	39.0	48.8	K	9.5	40 14.5	29.1		9.4	45.8	9.1	
9.5	50.9	33.3		9.5	40.5	53.4		6.8	43.7	29.1	R	9.5	57.0	37.1		9.4	0 16.1	34.8	
9.3	38 14.7	32.9		9.5	59 0.5	26.2		9.1	44.3	18.1		9.5	41 8.3	26.8		9.2	31.7	1.3	
9.1	39 13.3	30.5		8.9	1.7	14.3		8.5	51.4	44.4	K	8.2	27.1	59.6	K	9.4	58.1	54.4	
9.3	19.0	11.9		9.4	21.3	18.4	B	9.5	19 9.9	53.8	B	9.4	43.0	30.8		9.0	1 19.6	41.3	
9.5	26.5	39.9	B	9.5	23.2	10.5		8.5	14.6	45.2	K	8.0	49.2	44.5	B	9.5	21.0	0.6	
9.0	43.3	20.9		9.5	35.0	55.9		9.4	20.3	5.8		9.1	52.3	21.3	B	9.5	25.9	6.1	
9.5	56.6	51.3		9.0	36.8	29.8	K	9.5	36.2	1.2		9.2	52.6	22.7	S	9.5	2 14.7	51.8	
7.6	40 0.8	19.3	R	9.2	42.1	3.4		9.5	20 26.5	22.5		9.2	42 0.2	25.6		9.0	3 1.2	24.1	
9.5	35.0	17.4		9.1	43.8	33.4	B	8.5	21 7.2	34.6	K	8.3	1.9	19.8	K	9.3	11.4	54.9	B
9.2	41 4.4	57.0		9.3	47.5	19.2		8.2	22 2.5	57.0	K	9.5	43 24.0	44.6		9.5	42.8	4.4	
9.5	57.5	1.3		9.3	0 25.6	55.2		8.9	32.1	14.3		9.3	28.2	13.3		9.5	52.1	28.3	
9.5	42 2.3	36.0		9.5	2 40.1	44.0		9.5	23 2.0	42.9		9.5	31.5	59.1		9.5	5 1.3	53.1	
5.3	7.6	55.8	K	9.2	47.9	9.9		9.3	15.5	33.2		9.3	58.1	7.7		9.1	55.2	50.4	
9.0	8.2	7.4	R	9.1	3 18.6	1.6		8.8	40.6	53.9	K	9.5	58.2	19.2		9.1	6 37.1	47.2	
9.5	14.5	7.0		9.5	21.5	36.7		9.4	24 39.5	34.6	B	9.4	44 7.6	54.2		8.1	7 5.7	41.0	K
9.5	17.1	1.8		9.5	25.6	10.8		8.5	49.2	19.8	R	9.3	33.9	37.7		9.5	41.4	29.3	B
9.5	43.3	50.8		8.8	32.3	21.3	K	9.5	58.9	51.8	B	9.5	57.7	27.0		8.6	55.1	21.4	K
9.5	43 8.7	19.2		9.5	39.6	23.6		8.8	25 3.0	5.5		9.5	45 24.6	33.6		9.5	8 8.4	22.5	
8.9	33.4	34.1	B	8.6	5 28.5	50.2	K	8.8	10.4	3.0	K	9.5	46 12.7	2.2		9.5	39.1	43.8	
8.2	44 7.7	58.4	K	9.0	47.4	51.5		9.5	27.2	46.3		9.0	18.1	58.9	K	9.1	45.5	3.6	
9.4	26.8	0.8	B	8.5	51.0	22.3		8.8	26 2.4	33.2	B	8.5	24.3	44.6		9.4	9 42.4	51.6	
9.5	31.9	46.4		9.5	6 19.3	26.7		9.5	6.8	31.9		9.5	33.8	35.7		9.2	10 5.7	4.6	
9.1	35.0	14.4		9.4	24.0	36.9		9.5	31.5	2.6		9.5	34.4	27.0		9.4	7.5	11.0	
9.3	57.7	25.7		9.0	34.4	37.9	B	9.5	43.9	55.4		7.8	53.0	51.1	K	9.1	24.0	55.2	
9.5	45 2.6	0.8		9.5	53.7	51.1		9.5	27 27.0	48.0		8.0	58.7	33.6	K	8.5	35.1	43.1	K
9.4	36.4	1.5		9.4	59.5	5.3		8.6	53.5	2.0		9.5	47 46.2	51.2		9.3	42.2	49.0	
8.9	45.7	25.4	K	9.5	7 20.9	46.8		8.0	28 16.1	29.9	K	9.5	55.6	10.6		9.5	45.4	16.4	
9.2	46 19.3	49.0		8.8	24.4	25.1		9.4	23.5	26.4		8.6	48 0.5	46.3	L	9.4	49.0	21.8	
9.5	34.6	39.5		9.5	41.4	3.7		9.3	29 1.4	28.5		9.1	47.5	27.8		9.5	11 37.9	29.4	
9.0	47 24.3	50.5	K	9.5	54.6	25.0		8.8	2.4	42.9		9.4	51.0	55.2		9.5	52.4	39.6	
8.8	48 5.7	32.3	K	9.4	8 15.3	48.8		9.4	3.6	20.4		9.2	49 12.7	5.8		8.2	12 34.9	40.3	K
9.5	7.3	8.0		9.5	20.4	13.0		9.1	9.7	56.8	K	8.5	30.9	19.8		8.4	50.3	45.1	K
6.0	12.1	25.1	K	9.5	33.5	57.1		9.5	40.4	33.6		9.0	50 17.1	36.0		8.5	13 10.5	19.3	
9.5	35.6	38.8		9.5	42.6	30.1		9.5	48.3	57.8		9.1	28.3	6.5		8.0	46.3	56.9	L
9.5	38.7	31.8		9.5	47.2	41.6		8.9	30 16.2	13.6		9.5	33.3	20.2		9.2	49.8	52.4	B
8.9	58.5	49.1	R	9.3	9 17.0	14.9		9.2	56.3	58.2	B	9.4	42.1	15.0	B	9.4	55.1	54.5	
7.8	49 27.9	13.1	K	9.5	35.1	26.8		9.5	31 2.9	18.1		9.5	51 19.5	7.0		8.6	14 17.2	58.3	K
9.4	30.9	5.0		9.0	51.9	42.0		9.0	3.7	12.6		8.5	23.4	54.3	K	9.5	21.4	6.5	B
9.5	59.1	33.9		8.3	10 21.5	8.2	K	9.5	18.9	42.2		9.4	52 10.5	48.6	B	8.0	51.9	2.4	K
9.2	50 18.6	7.7		9.5	41.0	52.1		9.0	21.4	26.4		9.5	18.6	42.6		8.5	15 5.1	23.8	
9.5	22.2	46.6		9.3	11 30.3	58.0	B	9.1	32 36.9	49.5		9.2	26.2	14.5		9.5	16 10.5	14.1	
9.5	27.7	18.8		4.7	30.5	29.5	K	9.2	33 26.9	27.8		9.5	40.6	30.5		9.4	14.5	3.5	B

401—460				461—520				521—580				581—640				641—700			
	2ᵘ		+26°		2ᵘ—3ᵘ		+26°		3ᵘ		+26°		3ᵘ		+26°		3ᵘ—4ᵘ		+26°
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	16	40.7	17.3		8.1	38	45.2	7.3	K	9.5	3	15.2	6.0		9.1	28	6.2	48.6	B	9.5	46	58.0	30.0	
9.3		50.7	55.6		9.5		52.8	3.3		9.5		34.0	15.8		9.5		12.0	57.6		9.1	47	1.0	11.2	K
9.3		53.7	8.8		9.4	39	11.7	0.0		6.2		36.5	41.3	K	9.5		15.1	2.2		9.0		30.4	58.0	
9.5	18	3.2	55.3		9.5		21.7	9.7		9.4		41.0	46.1		9.1		40.4	2.3		9.3		40.2	34.5	
9.5		5.0	30.4	B	8.1		35.8	28.3	K	9.3		47.4	56.7	K	9.5	29	40.3	12.6		8.9		43.0	19.0	
9.4		19.5	51.0		9.5		46.9	33.0		9.5	5	12.0	53.3		9.4		54.0	13.3		9.1		50.0	52.2	
9.0		27.5	27.6	B	8.8	40	9.7	1.8	K	9.5		51.0	46.8		9.5	30	10.5	33.5		9.5	48	7.3	33.4	
9.5		40.1	2.7		9.0	41	14.0	8.0		9.5	6	21.0	43.0		9.5		38.7	11.4		8.3		11.0	4.9	K
6.5		44.9	21.4	K	9.0		18.9	29.3		9.4		47.7	4.1		9.0		42.0	22.1		9.5		36.5	58.0	
9.0	19	5.1	19.0	K	9.0		20.6	38.9	K	8.1		56.5	22.0	K	8.5		45.3	45.5	K	9.0		45.3	21.7	
9.0		15.7	40.0		3.7		27.9	40.3	K	9.5	7	38.0	30.2		9.0		57.4	25.9	L	9.5		53.6	8.1	
9.5		21.6	31.0		9.5		30.0	20.2		9.5	8	4.0	8.3		9.4	31	10.2	14.3	B	9.4		58.5	35.4	
9.1	20	3.8	20.4		9.5		36.8	26.2		9.5		32.9	54.0		9.5		13.5	54.2		9.5	49	2.2	56.9	
9.5		13.2	9.3		8.3	43	9.0	1.1		8.6		53.5	20.4	K	9.2		22.4	7.9	B	9.0		31.0	19.6	K
9.3		15.1	43.1		8.0		20.3	41.0	L	8.8	9	25.2	53.3	L	8.8		24.1	31.3	K	6.8	50	17.4	46.8	L
8.6		28.7	36.2	K	8.5		38.7	29.6	K	9.5		31.5	25.9	B	8.3		28.4	24.8	K	9.3		50.8	9.3	
9.5		39.8	3.9		9.3		53.4	34.8		8.8		39.5	22.7	K	8.8		32.4	22.8	K	9.5	51	14.8	42.3	
9.0		56.1	17.9	L	9.0	44	30.2	56.7	K	9.4		47.6	58.2		9.5	32	23.9	1.2		9.5		21.1	39.2	
9.5	21	51.1	21.4		9.5		43.3	23.5		8.5	10	23.0	10.2	K	9.5		28.5	33.9	B	9.1		21.8	34.8	
8.9	22	0.0	51.4		7.3	45	28.6	10.0	K	6.0	11	16.0	32.3	K	9.5	33	19.0	20.1		9.5		38.8	23.4	
9.4		22.2	13.8		8.6		41.1	22.4	L	9.5		59.4	3.0		7.7		45.5	6.9	K	9.5	52	4.9	3.7	
9.5		57.3	35.5		8.0	46	48.4	21.4	K	7.9		59.5	23.8	K	9.4	34	5.8	26.7		9.5		9.0	38.5	
9.1	23	6.7	15.6		9.5		55.0	20.4		8.8	12	45.0	46.1	K	9.5		13.1	19.1		9.4		32.3	23.2	B
7.3		7.4	55.1	K	7.7	47	4.2	16.9	K	9.2		59.1	2.5		9.0		48.4	5.3		9.5	53	4.7	9.7	
8.4	25	16.5	43.9	K	9.0		15.6	23.1		9.2	13	45.6	24.8		9.5		59.6	1.4		8.8		5.3	0.2	
9.3		40.2	46.8		9.5	48	40.0	43.7		9.5	14	14.1	50.6		9.5	35	13.9	41.5		9.2		24.3	46.1	B
8.9		44.5	38.9	L	9.1		41.3	31.3		8.5		18.0	7.5	L	8.2		18.3	56.5	K	9.3		51.9	40.9	
9.5	26	9.7	34.8		9.3		53.9	9.3		7.0		25.9	21.7	L	8.5	36	29.6	25.6		9.5	54	3.8	12.7	
9.4		54.2	44.2	B	9.1	49	35.0	44.7		9.5		47.6	12.4		9.5		39.0	2.7		8.8	55	7.5	4.8	K
9.4	27	18.0	41.2		9.5		41.5	58.0		8.3		50.1	52.9	K	9.2		52.2	2.4	B	9.2		9.1	42.7	
9.5		37.7	12.7		8.9		41.8	45.0		9.5	16	3.2	23.9		9.2		53.9	14.0		9.1		22.5	26.9	
7.8		43.8	33.1	R	9.4	50	10.0	43.7		9.5		37.5	10.8		9.3	37	7.3	33.9		9.3		31.1	49.0	
8.0		50.9	49.3	K	8.3		20.5	11.1		9.5	17	37.3	30.5		9.5		14.1	4.7		9.5		33.4	18.1	B
9.1		53.1	54.4		8.6		49.5	44.1	K	9.2		37.7	50.7		9.5		14.8	26.7		9.3	56	19.7	50.6	
9.5	28	20.1	48.9		8.6	51	16.5	43.7	K	9.2		44.6	19.8		9.1		19.7	54.5		8.4	57	11.7	8.5	K
9.5		32.8	56.8		8.4		25.9	18.6	K	9.5	18	17.2	5.5		9.5	38	47.4	32.8		9.3		30.1	0.6	
8.7		49.9	28.9	K	9.1	52	30.0	13.5		9.5		17.2	12.5		8.0	39	34.7	8.2	K	9.5		31.5	38.8	
8.0	30	2.9	53.7	K	9.5		37.0	25.0	B	9.5	19	31.8	3.4		9.4	40	22.5	11.9		9.5	58	24.0	42.0	
9.0		23.7	19.0		9.5		46.2	1.6		9.5	20	13.8	47.4	B	9.2		56.1	10.7	K	9.3		25.9	21.8	
9.2	31	37.7	27.9		9.3		55.3	1.4		9.2		24.0	53.9		9.1		58.9	54.3		9.5		57.3	27.5	
9.2		38.6	35.5	R	9.4	53	0.4	24.8	B	9.4		41.9	43.6	B	9.2	41	4.0	20.7		9.5	59	2.8	5.6	
9.5	32	11.6	36.9		9.5		42.6	55.4		9.5		55.1	4.7		9.5		12.8	12.4		8.9		25.0	36.5	
5.5		13.7	26.2	K	7.2		50.5	2.9	K	9.5	21	22.7	5.7	B	9.5		37.8	56.1		9.5	0	9.2	11.2	
9.0		38.5	13.8	K	9.2		53.1	20.8		9.5		26.3	53.0		9.0		58.4	37.9	K	8.5		17.1	43.3	K
9.1		42.1	4.1	B	9.2	54	3.1	15.3	B	8.7		37.6	30.4	K	9.2	42	3.0	58.4		9.3	1	14.0	4.9	
9.5	33	13.1	27.5		9.5	55	8.3	54.0		8.2	22	18.7	36.6	K	9.5		21.3	20.3		5.8	2	1.2	5.4	K
8.0		14.7	19.3	K	9.5		42.5	58.8		9.1		43.0	44.7	B	9.4		43.1	46.7		8.6		22.8	7.5	K
9.5		30.2	49.2		9.5		52.5	26.5		9.5	23	51.8	14.0		9.5		57.7	13.7		9.5		38.9	18.5	
9.2		51.2	53.9		9.5	58	29.2	24.5		9.3		53.1	52.4	B	9.5	43	2.8	40.9		8.9		46.0	33.0	
9.3	34	1.4	29.3		9.5		37.0	4.0		9.3	25	49.3	18.1		9.4		19.6	48.8	B	9.1	3	4.2	45.6	
7.6		37.3	22.2	K	9.5	0	16.2	49.2	B	9.1	26	5.0	40.1		9.2		24.0	31.3		9.4		4.8	47.3	
8.8	35	0.5	18.4		9.5		48.5	24.1		8.2		15.6	6.7	K	8.5		51.1	17.5		9.1		44.0	10.7	
9.3		26.1	33.5		9.3		52.9	8.2		9.1		22.3	6.0		7.5	44	12.5	14.2		9.4	4	8.4	43.6	
8.7		34.9	26.0	B	9.1	1	4.0	23.1		8.3		36.3	21.5	K	9.5		24.1	38.6		9.5		10.9	4.0	
8.6	37	2.5	29.4	B	9.5		49.5	5.8		9.5		49.4	4.4		9.3		56.2	11.0		9.5		16.1	16.7	
9.1		22.7	25.2		6.0		51.5	20.5	K	9.5		51.3	39.0	B	7.3	45	3.8	27.9	R	9.5		27.5	23.2	
9.1		42.7	48.3		9.5		52.7	37.3		9.5	27	18.6	50.8		9.5		20.3	55.9		9.5		32.6	58.5	
8.5		53.4	26.2	K	9.5	2	10.8	55.4		9.3		19.9	11.0		9.5		48.0	54.5		9.4		52.1	2.0	
9.1	38	7.7	50.3		8.4		53.5	17.9	K	8.9		23.7	51.5	B	9.2		55.4	5.7		9.5	5	22.0	58.8	
9.3		19.9	4.8	B	9.5		55.3	33.4		9.5		46.8	22.9	B	8.5	46	18.1	38.2	K	9.1		54.0	5.7	

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	5ᵘ	+26°			5ᵘ—6ᵘ	+26°			6ᵘ	+26°			6ᵘ	+26°			6ᵘ	+26°	
m		′		m		′		m		′		m		′		m		′	
8.9	46 24.6	8.4		9.5	56 26.2	12.2		9.3	2 35.5	8.4		8.9	10 45.7	43.7		9.5	19 38.4	9.3	B
9.5	31.2	36.3		9.4	34.8	31.9		8.3	36.7	43.0	R	9.5	56.0	4.6		9.5	43.7	47.8	
8.9	37.8	26.9	K	9.5	36.6	38.2		9.2	41.9	27.2	K	9.4	59.0	24.5		9.3	20 10.9	45.6	
9.3	46.8	17.8		9.4	50.6	12.8		9.2	43.8	17.1		9.0	11 38.0	54.6		9.5	11.3	51.3	
9.5	47 21.2	7.0		9.5	53.6	36.8		8.7	44.5	0.8	K	8.3	28.7	37.6		9.5	23.2	2.0	
9.3	25.4	13.4		9.2	53.7	36.2	B	8.8	45.6	27.9	K	9.5	30.1	43.0		9.5	44.8	26.1	
9.4	47.0	4.5		8.9	55.0	34.5		8.5	3 1.4	30.3	K	8.9	47.2	32.7		9.3	21 14.6	27.8	
9.5	48.3	48.7		9.1	56.7	37.0		9.4	1.6	9.6		9.5	53.1	2.6		9.1	20.2	14.1	B
9.5	56.4	30.5		9.5	57 4.9	45.8		9.5	3.8	7.1		9.5	12 2.3	56.1		9.4	21.3	36.5	
9.5	48 14.0	57.2		9.0	10.6	1.7	K	9.4	6.2	42.6		9.3	8.0	3.5		9.5	28.7	4.7	B
8.0	15.8	49.7	L	9.4	13.5	55.0		9.5	20.3	22.6		9.0	9.5	29.3	B	9.4	36.4	40.2	
9.3	18.7	11.9		9.5	15.7	5.2		9.5	39.0	4.6		9.4	17.5	39.2		9.4	42.5	56.5	
9.2	32.8	59.7		9.5	20.8	16.6		9.4	43.4	48.1	B	9.5	36.2	42.4		9.5	46.4	2.5	
9.4	33.4	40.1		7.6	22.3	32.0	L	9.5	47.6	58.0		9.5	56.5	0.9		8.0	48.7	44.1	B
9.2	55.4	10.6		9.2	33.3	20.4	R	9.3	4 15.0	34.2		9.5	13 5.1	22.9		9.3	50.3	2.1	B
9.3	56.5	43.7		9.5	39.1	42.7	R	9.5	17.5	44.1		9.4	11.4	50.6		9.5	22 7.2	11.1	
9.5	49 15.4	25.2		9.5	42.5	11.2		9.4	22.4	20.4		9.5	12.7	57.5		9.5	8.3	9.5	
8.8	17.8	10.6		9.1	54.5	49.6		9.4	27.3	57.6		9.2	14.1	12.8	K	9.3	47.8	5.6	
9.5	20.4	17.7		7.5	59.9	40.5	L	9.0	28.5	29.5		9.2	20.5	29.1		9.0	57.0	56.9	
9.4	26.7	47.1		9.4	58 3.5	29.7		9.5	38.4	40.9		9.0	22.5	49.6	L	9.5	23 2.2	49.7	
9.5	31.5	39.7		9.5	15.5	8.8		9.5	5 1.1	43.6		8.3	23.4	44.6	K	8.2	14.7	17.2	K
9.3	33.8	20.3		7.0	17.0	41.8	L	9.5	13.9	25.3		9.3	52.1	23.6		9.5	31.8	6.1	
9.5	34.8	6.0		9.2	20.6	17.7		9.5	23.0	34.3		9.3	57.6	28.0		9.3	45.5	29.1	
9.5	51.2	10.9		9.3	26.1	2.5		9.3	37.9	59.9		8.1	14 0.2	3.3	K	9.2	49.2	52.1	K
9.5	54.8	27.7		9.5	38.2	36.2		9.2	56.9	58.4		8.7	33.3	51.4	K	9.3	24 4.1	23.2	
9.4	50 38.4	31.3		8.5	39.8	26.3	K	9.5	6 4.1	23.1		8.6	49.4	9.7	K	9.4	6.3	59.6	
9.1	51 17.3	47.5		9.5	49.9	59.8		9.3	11.7	27.1		9.3	59.9	25.7		8.6	23.2	42.9	
9.5	30.0	28.8		7.8	55.9	24.8	K	9.0	12.2	42.7		9.3	15 11.6	8.2		9.5	26.5	9.6	
9.4	37.8	35.9		9.5	59 0.7	40.0		9.5	36.0	6.9		9.3	16.8	6.5		9.5	29.9	5.4	
9.5	41.6	53.9		9.0	10.9	30.7	K	8.5	50.7	27.7		9.4	21.3	15.7	B	9.4	38.8	36.5	
8.7	44.3	41.0		9.5	11.0	12.9		8.7	7 17.9	45.5	K	9.5	24.8	46.3		9.2	53.8	46.1	
9.3	45.3	16.8		9.3	25.4	34.3		9.4	23.9	45.5		9.4	37.9	25.3		8.9	25 0.2	52.8	K
9.5	52 10.0	49.2		9.5	27.1	51.3		9.5	24.7	50.9		9.2	47.1	58.1		9.5	12.4	19.9	
8.9	18.8	43.8	K	8.8	29.4	30.3	K	9.5	28.5	28.8		9.2	48.0	57.8		9.5	25.2	32.7	
9.5	35.6	42.8		9.5	33.0	41.8		9.4	29.8	12.9	B	9.0	16 15.6	7.6	K	9.5	34.9	0.7	
9.5	53 1.8	24.0		9.3	40.0	6.1		8.2	49.2	32.5		9.5	42.6	38.0		9.2	43.9	35.2	
9.4	11.5	31.4		9.4	44.1	31.7		9.5	8 3.3	52.0		9.5	43 7	52.3		9.3	45.2	12.0	
9.5	20.7	51.9		9.4	50.5	35.2		9.5	4.3	32.0		9.5	49.8	6.1		9.4	26 12.9	36.2	
8.6	26.1	25.2		9.0	58.6	27.8	K	9.3	8.0	24.1		9.4	58.6	38.7		9.5	24.4	0.1	
9.3	30.8	3.0		9.2	59.5	42.5		9.4	9.3	28.1	B	9.4	17 4.9	25.1		9.5	30.9	15.4	
9.4	32.2	8.2		9.5	0 18.3	32.7		9.5	13.3	51.3		9.5	19.6	38.2		9.4	38.4	30.3	
9.0	37.9	9.7		9.5	28.2	11.8		9.5	22.0	4.8		8.9	23.0	12.9	B	9.5	47.5	43.9	
9.4	48.0	5.0		9.4	33.4	25.4		9.5	43.2	32.0		9.5	30.0	17.6		9.2	50.8	5.6	
8.9	54 25.2	7.2	K	9.1	33.4	30.9	B	8.7	44.4	25.1		9.5	35.6	8.4		9.5	27 1.3	40.4	
8.9	26.1	16.3	R	9.3	35.7	21.9		9.4	46.4	30.0		9.5	58.3	1.4		9.4	3.0	34.3	
7.2	31.6	31.5	K	9.4	48.0	58.5		9.1	46.5	14.3		9.3	18 8.8	0.4		9.0	3.9	50.3	K
9.4	37.8	11.2		9.4	1 0.0	45.2		9.1	47.0	15.2	R	9.2	9.0	54.1	K	9.5	5.6	54.5	
9.3	40.6	20.4		9.4	5.4	10.4		9.5	55.7	10.0	B	9.5	9.5	5.7		9.5	7.7	7.1	
8.9	41.7	53.7		9.3	5.7	37.1		8.0	9 5.0	29.0	K	9.1	13.2	32.9		9.4	9.9	43.9	B
8.6	42.9	44.3		8.7	8.7	26.8	K	9.4	10.6	28.3		9.1	15.9	45.5		9.3	14.1	9.5	
8.7	50.6	21.3	K	8.6	13.3	31.0	K	9.2	13.0	54.2		9.3	22.8	5.7		9.3	15.2	47.6	
9.5	55 10.9	3.2		9.3	15.5	54.9		9.5	33.8	36.2		9.4	29.6	28.6		9.0	16.1	23.1	K
9.5	31.3	5.1		9.1	19.1	22.8	R	9.5	34.8	56.1		9.0	30.0	1.1		9.3	27.4	50.3	
9.5	43.0	54.6		9.3	28.8	59.6	B	9.2	38.4	50.1		9.3	34.0	56.8		9.5	51.8	46.3	
9.4	56.6	8.3		9.3	29.0	14.6		9.5	10 5.4	30.6		9.5	38.2	39.2	B	9.5	28 0.0	34.0	
8.6	56 1.3	4.4	K	8.7	35.6	28.1	K	9.5	6.2	22.2		9.4	46.5	28.9		9.3	34.5	29.3	
9.5	16.0	45.3		7.4	52.1	2.9	K	8.8	12.9	1.8	K	9.4	51.3	21.7		9.2	47.7	2.2	
9.5	19.8	5.2		9.2	2 4.9	24.9		9.0	13.5	58.4		9.3	19 17.6	28.1		9.2	50.2	32.7	
9.5	27.0	13.5		9.1	25.4	40.2		8.9	38.6	18.0		9.2	21.8	16.0		9.3	29 2.1	11.2	B
9.4	28.9	18.1	B	8.8	34.6	28.6	K	9.5	42.8	25.9		9.3	37.9	45.6		8.7	38.7	37.7	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ᵘ	+26°			6ᵘ	+26°			6ᵘ—7ᵘ	+26°			7ᵘ	+26°			7ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	29 42.6	6.0		9.2	39 46.3	27.8		9.5	51 52.3	44.3		7.0	2 32.0	38.5	K	9.5	14 42.0	15.5	
8.9	42.9	25.4		9.5	40 10.3	51.5		9.5	56.0	11.8		8.9	47.6	50.6	K	8.8	46.5	32.0	K
9.5	56.6	53.8		9.5	30.2	14.0		9.1	52 3.3	25.9	B	9.5	55.5	28.2		9.5	15 23.1	10.0	
9.3	58.1	43.9		9.5	34.2	4.5		8.9	14.5	21.8	K	9.1	3 4.0	19.7		9.5	27.3	1.7	B
9.5	30 22.4	30.3		9.1	34.3	31.2		9.1	25.0	29.3	K	8.7	22.1	3.5		9.1	34.0	13.8	
9.0	30.9	15.0		9.5	41 14.3	58.1		8.6	26.0	25.9	K	9.5	31.0	53.1		9.5	41.2	57.9	
9.5	57.2	38.2		9.5	23.3	3.3		8.4	35.0	46.4	K	7.8	33.0	49.5	K	8.8	51.0	54.3	B
9.0	57.4	30.8		9.3	34.7	3.7		9.5	37.8	13.4		9.1	55.1	20.3		9.3	52.3	50.3	
9.0	31 16.1	22.8	K	9.5	39.1	48.0		9.5	42.3	59.4		9.3	4 3.8	45.3		9.5	53.2	32.0	
9.3	30.3	1.3		8.0	48.3	28.2	K	9.5	51.3	52.8		9.5	50.6	14.5		9.3	16 13.0	22.8	
9.3	38.5	19.6		8.7	42 2.3	4.2	L	8.9	53 0.0	47.2		9.5	51.5	6.6		9.1	16.5	47.8	
9.5	39.6	49.0		9.5	27.8	11.4		9.5	0.1	39.1		9.0	5 0.0	43.1		8.7	47.8	53.8	
9.5	43.5	19.1		9.0	31.3	50.5	K	9.3	13.0	38.3	B	9.3	28.5	38.2		9.5	17 15.5	42.0	
9.5	50.9	15.4		9.2	52.6	27.0	B	9.5	18.5	19.1		8.9	32.9	9.0		8.5	23.3	12.8	K
9.5	51.2	52.2		8.1	53.4	34 6	L	8.0	26.0	4.2	K	8.8	47.4	53.4	K	9.3	24.0	31.3	
9.5	57.2	42.8		8.8	43 3.7	22.1		9.5	55.5	15.2		9.5	54.7	7.3		9.5	45.9	55.5	
8.2	32 0.2	48.5	K	9.4	17.8	29.5		9.5	57.3	0.1		8.5	6 6.5	14.5		9.4	18 4.5	43.3	
9.5	26.3	1.4		9.5	28.9	46.1	B	9.4	54 2.0	11.8		8.2	13.0	7.3	R	9.2	9.5	38.5	
9.4	26.4	26.3		9.5	47.5	57.1		9.5	16.6	59.0		9.5	31.8	8.7		9.5	24.5	36.1	
9.2	26.9	54.5	K	9.5	55.5	34.7		8.9	17.7	52.4	K	9.4	47.7	52.8		9.5	28.7	43.6	
9.3	45.6	34.0		9.5	44 2.2	38.3		9.4	20.6	0.6	B	9.3	51.2	23.6	B	9.0	41.8	4.8	
9.0	53 4	26.1		9.5	42.8	52.3		9.2	55 5.7	30.8	B	9.1	52.5	46.1		9.3	42.5	7.5	
9.5	33 1.2	0.9		9.2	50.4	1.9		9.3	5.7	12.0	B	9.3	54.6	7.2		8.9	59.6	26.6	K
9.3	3.5	4.9		9.5	45 10.8	40.5		9.3	7.0	24.4		9.5	7 3.0	0.4		7.3	19 4.6	30.6	K
9.5	5.3	37.5		9.3	17.9	2.8		9.1	12.5	49 5		9.3	23.6	12.2	B	9.3	24.2	59.4	
9.3	5.3	44.6		9.4	19.6	8.6		8.5	17.0	33.4		9.3	27.6	27.9		8.9	55.5	53.7	K
9.3	14.1	19.4		7.5	28.5	43.3	K	9.0	20.0	22.1		9.4	44.5	16.5		9.5	20 8.6	0.0	
9.3	14.4	46.3		8.8	55.7	17.0	K	9.5	56 25.7	44.6		6.5	8 4.0	56.7	K	9.3	37.0	28.3	
9.4	16.3	32.7		9.5	59.0	50.7		9.5	30.3	58.3		9.5	14.0	47.5		9.5	21 0.7	8.0	
9.2	23.0	53.8		8.5	46 6.5	24.9	K	9.5	42.8	49.1		7.5	17.5	37.4	K	9.3	5.1	4.2	
9.3	45.5	35.1		9.5	16.5	49.8		8.9	47.5	21.4	K	9.5	49.5	9.4		9.1	31.6	12.6	
9.0	51.7	33.3		9.0	18.5	42.6		9.5	51.0	42.3		7.6	58.0	35.4	K	9.3	36.5	46.5	
9.2	52.7	33.5		9.2	46.5	6.3		8.3	57 8.1	1.8	K	9.4	9 2.4	13.2		8.7	36.7	3.7	K
9.2	55.3	12.3		9.5	53.0	48.5		9.5	16.3	36.5		9.1	9.0	48.5		9.3	50.9	40.0	B
9.5	34 4.4	0.9		9.5	59.4	5.2		9.3	22.5	27.9		9.5	9.8	41.7		9.3	56.5	1.0	K
9.5	30.2	13.6	B	9.0	47 18.7	9.0	K	9.4	24.5	19.3		8.9	20.5	50.3		9.3	22 5.9	29.3	
9.4	35.0	40.6		9.5	26.1	40.9		9.3	49.8	50.8		8.0	59.7	12.0	B	9.1	12.8	42.7	
9.1	43.8	21.8		9.0	40.5	0.3		9.5	51.2	30.0		9.5	10 10.0	20.0		9.5	31.3	59.9	
9.5	53.1	13.1		9.5	52.3	55.6		9.5	58 21.8	23.9	B	9.5	12.8	2.6		9.0	42.0	45.1	
9.4	35 6.2	28.7		9.2	48 13.0	52.1		9.5	23.6	23.6	B	9.5	43.0	9.7		8.5	47.4	5.9	K
9.4	30.8	42.5		9.0	13.4	1.2		9.5	50.0	6.7		9.5	11 10.0	21.0		9.4	23 21.0	59.9	
9.0	43.1	16.6	K	9.5	39.1	1.8		9.3	52.3	21.1	B	9.4	22.5	17.3		9.5	29.5	45.8	
9.5	44.1	8.2		9.5	40.5	55.6		8.9	59 47.5	51.0	K	9.2	31.5	58.8		9.5	41.4	0.8	
9.2	36 12.3	27.5		8.8	53.0	44.4		8.8	54.5	58.6		9.5	42.9	1.7		8.8	44.8	28.3	
8.5	32.6	24.0	K	6.5	49 51.0	15.8	R	9.5	0 0.2	45.4		8.3	56.6	52.6	K	9.0	46.3	8.8	
8.8	44.5	55.7	K	9.5	56.8	41.3		9.2	7.5	56.4	K	9.5	12 2.0	17.3		9.1	52.8	35.1	
9.5	51.7	12.7		9.0	58.0	21.0		9.5	9.1	6.6		9.5	15.4	25.9		8.7	24 1.2	48.4	K
9.5	37 32.7	14.5		9.4	50 11.0	29.0		9.4	17.5	24.8		8.0	18.5	45.4	K	7.8	18.0	23.8	K
9.5	53.3	57.9		9.0	13.0	35.8		9.0	34.0	52.0		9.4	26.2	30.1	B	8.3	21.0	45.8	K
8.6	38 6.7	27.1	L	8.6	17.3	5.3		7.7	41.6	44.2	K	9.5	29.0	15.1	B	8.7	27.2	1.8	
8.5	9.8	43.3	K	6.5	31.4	5.8	R	8.5	1 7.5	25.6		7.9	36.7	25.5	K	9.0	42.7	18.0	
9.5	16.0	55.0		8.8	32.0	13.9		9.2	14.6	1.2		8.2	45.6	7.4	K	9.1	25 2.6	27.1	
9.2	20.0	54.0		9.5	34.6	54.6		9.5	14.6	50.7		9.3	47.4	15.6	B	9.3	30.1	48.9	B
9.5	24.8	27.8		9.5	34.9	50.2	B	9.5	21.2	44.4		9.2	47.5	11.5		9.5	45.4	49.2	B
8.5	29.1	16.5	K	9.5	59.5	30.7		9.5	44.5	24.1		8.8	49.8	12.5	K	9.5	51.3	24.5	
9.3	59.0	29.2		9.5	51 11.0	38.5		9.5	54.9	8.4		9.5	13 25.5	13.5		9.3	53.6	52.9	
9.5	39 3.0	18.2		9.5	14.6	2.0		9.4	57.6	33.4		9.4	38.6	47.2		9.0	56.0	50.4	B
8.8	7.1	52.5	S	9.5	17.8	37.5	B	9.3	2 7.7	40.3	B	9.5	47.0	47.9		9.3	26 2.4	30.3	B
9.5	25.4	57.6		9.5	34.5	32.3		9.5	25.7	35.1	B	9.1	14 10.8	41.5	B	9.5	11.5	2.5	
9.5	39.7	51.1		9.4	40.9	19.4		9.5	30.3	7.8		9.5	10.8	45.7		9.4	21.6	32.3	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	7ʰ		+26°		7ʰ		+26°		7ʰ—8ʰ		+26°		8ʰ		+26°		8ʰ		+26°	
m				m				m				m				m				
8.4	26′	24.8″	54.4	K	8.7	42′	20.7″	43.6	K	9.5	58′	43.9″	39.5		9.4	17′	29.3″	17.5		9.3	38′	54.8″	14.4	
9.3		33.5	15.1		9.4		45.6	8.3		9.1		59.6	46.7	K	8.5		30.0	59.1	K	9.3	39	11.4	29.0	
9.0		33.5	53.0	K	9.4	43	4.4	33.2		9.4	59	0.0	55.8		9.5		31.3	24.8	B	9.0		14.0	4.3	
9.4		55.9	35.3	B	9.5		47.8	50.1		9.5	0	3.4	14.0		9.4		47.5	11.0		9.2		17.3	59.7	
8.9	27	13.6	31.3		8.8		56.4	18.1	K	9.5		28.3	15.7		9.5		55.3	19.4		9.1		20.0	3.5	
9.5		25.4	52.4		9.5	44	9.7	12.3		9.4		35.9	41.2		9.0	18	32.9	12.0		9.2	40	50.5	31.4	
8.9		29.0	10.3		9.3		28.0	52.5		9.1		42.4	44.3		9.3	19	35.1	40.3		9.2		50.9	58.1	
9.5		30.7	22.7		8.0		51.8	56.1	K	6.8	1	26.8	15.8	L	9.5	20	13.9	8.9		8.4	41	31.0	53.7	K
9.5		45.6	10.4		9.5	45	6.4	56.6		9.2		31.8	17.1		7.0	21	6.3	40.5	K	9.4	42	22.5	28.8	
9.0	28	6.3	1.9	K	9.5		15 3	29.9		8.7		31.9	18.9	B	9.5		28.6	24.2		9.4		36.9	10.5	
9.0		13.5	10.1	K	9.5		22.0	0.3	B	9.2		37.5	49.8		9.3		54.1	44.7		9.5		37.4	35.7	
9.4		27.9	25.8	B	9.1		35.4	56.3		9.4		59.0	50.7		8.5	22	14.0	30.2	L	9.0		37.6	50.3	
9.4	29	9.0	48.5		8.5		37.6	32.7	K	9.2	2	35.0	12.0	K	8.3		29.2	38.8	K	9.5	43	7.2	2.8	
9.2		13.8	54.0		9.5		45.4	27.8	B	9.5		52.2	55.7		7.5		31.8	13.6	K	8.5		21.8	15.9	L
9.2		33.6	10.1		8.9		47.0	25.3	K	9.4		57.6	9.0		9.5	23	34.6	56.9		7.5		24.8	15.4	L
9.4		41.3	14.1	B	9.0		49.8	27.4	K	9.4	3	25.7	22.4		8.9		48.4	26.2		9.5		28.5	27.5	
9.1		45.0	36.8		9.4	46	11.3	2.0		9.4		35.9	25.2	B	9.5		57.7	8.5		9.3		39.9	8.7	
9.2		58.2	5.2		9.5		11.7	46.8		9.5		42.4	7.1		8.9		58.0	3.7		9.5		57.0	6.0	
9.3	30	28.3	8.5		9.5		35.1	56.0		9.5		45.9	26.2		9.3	24	15.0	2.8		9.4	44	10.8	4.4	
9.2		58.8	3.5	K	9.4		35.7	45.2		9.5		47.9	29.0		9.5		19.4	10.7		9.3		21.4	32.0	
9.4	31	1.1	7.3		9.5	47	27.3	40.5		9.3		52.2	18.9		9.0		21.9	46.8	K	9.3		44.1	36.2	
9.3		10.0	48.5		9.5		37.4	14.7		8.5		55.1	40.6	L	9.4		45.6	0.4		9.5	45	8.8	26.3	
9.2		11.9	36.1		9.5		54.8	20.2		9.3		59.1	2.7	B	8.4	25	39.3	0.4		9.4		52.7	19.4	
9.0		25.5	40.6	K	8.2		58.4	29.2	L	9.2		59.1	16.5		9.4		58.7	16.3		9.4	46	7.6	25.8	
8.5	32	25.0	13.5	K	9.5	48	28.1	27.8		9.5	4	44.4	4.2		9.3	26	29.2	16.9	B	6.7		18.4	46.1	K
9 4		46.0	20.4		9.3		50.9	1.1		9.0		54.4	7.0	B	8.5		45.7	21.1	L	7.2		49.9	57.7	K
9.5	33	1.0	21.8		9.5		53.0	42.6		9.4		55.5	9.5		9.5	27	36.9	55.6		9.0		54.3	39.1	
9.5		24.4	11.6	B	9.5	49	6.4	22.0		9.4	5	35.6	59.8		9.5		37.8	24.8		9.5	47	32.4	21.6	
9.5		39.5	26.6		8.8		50.3	24.6	B	9.2	6	9.5	1.0		7.8	28	2.0	26.6	K	8.1		34.0	54.9	K
9.0		57.0	18.3	K	9.3		53.4	35.0		9.5		21.5	2.7		9.2		4.1	51.8		9.4	48	53 5	27.8	
8.5	34	35.2	57.0		9.3	50	6.4	25.0	B	9.3	7	21.6	40.7		9.3		14.9	4.6		9.3		53.8	40.1	
9.5		48.7	22.8	B	9.3		50.1	54.1		9.5		28.3	26.1		9.5		23.7	40.0		9.5	49	15.2	43.8	
6.3	35	16.2	7.4	K	9.5	51	9.3	2.1		9.4		37.5	43.7		9.4		39.4	29.1		7.7	50	23.0	29.0	K
9.4		17.6	58.7	B	9.5		31.1	41.9	B	9.2		46.6	58.9	B	9.5	29	2.8	6.1		9.5		47.1	39.6	
9.5		22.7	58.1		9.5		52.8	55.8		9.5		47.2	47.5		7.8		6.2	44.6	L	9.1	51	6.4	5.6	B
9.5		42.5	18.0		8.7		58.0	1.5		9.3		59.2	56.9		7.5		29.7	33.7	K	9.0		8.4	14.5	L
9.1		46.8	47.5	K	9.0	52	4.5	1.1		9.5	8	1.4	13.0		9.5	30	30.2	45.7		7.3		22.9	59.6	K
8.2	36	40.3	19.6	K	9.4		22.1	41.7	B	9.5		30.5	19.2		9.5		31.6	35.1		9.4		41.3	48.9	
9.5		50.7	39.1		9.5		24.6	50.5		9.1		32.1	49.5	K	9.2	31	20.0	23.6		9.3		42.7	49.4	B
8.8		57.2	53.0		9.5		36.8	12.3		7.0	9	23.0	52.6	K	9.3		28.3	56.0		9.3		48.5	18.2	
9.5		58.3	34.8		9.2	53	0.0	55.1		9.1	10	3.3	46.2	K	9.4		29.5	2.0		9.1	52	26.3	48.8	
9.2	37	44.1	36.7		9.2		2.5	7.1		7.1		10.0	47.2	K	8.7		42.2	43.3	K	8.7		29.6	27.1	L
9.5		45.6	58.4		9.3		5.1	42.9		9.5		38.5	25.5		8.7		42.7	35.3	B	9.0	53	3.1	58.5	
9.5		51.8	27.8		9.5		39.1	28.5		8.8	11	16.8	49.9	K	9.2		43.0	30.5		8.2		7.0	57.3	
9.2		53.4	21.5	K	9.5		48.4	33.0		9.4		41.1	37.9		9.4		45.3	9.0	B	8.7		21.2	46.5	S
9.5	38	1.1	39.9		9.5		52.8	5.8	B	8.6	12	27.4	46.8	K	8.8		54.1	17.3	K	9.0		49.0	27.2	B
8.7		5.8	22.4	K	7.5	54	30.4	40.2	L	9.4		54.7	30.3		9.3		55.1	17.7		9.5		53.4	38.6	
9.5		54.8	20.6		9.1		46.4	15.8		8.4	13	29.1	22.4	K	9.5	32	33.7	51.1	B	9.2		58.2	27.8	
9.5	39	3.7	13.7		9.1		53.7	7.1		9.5		37.5	52.7		9.5	33	1.6	17.7		7.0		59.6	25.5	L
9.5		13.5	59.2		9.5		58.9	56.0		8.2		59.7	10.6	K	9.3		26.4	37.4		9.5	54	31.5	2.0	
9.5		15.2	1.7		8.9	56	11.8	10.3	K	9.1	14	3.4	41.3		9.5		37.2	44.1		8.7		47.1	1.5	K
9.0		25.1	19.2		9.5		29.5	7.2		9.5		4.8	54.8		8.5	34	3.4	34.5	K	8.4	55	2.6	26.4	K
9.5		53.4	4.9		8.2		45.4	31.2	K	9.4		40.5	40.3		9.2		22.5	29.6	K	9.5		33.5	57.5	
9.1	40	8.5	53.7		9.5		51.6	20.9		9.5	15	7.3	8.6		9.5		52.9	16.0		9.4	56	23.6	55.7	
9.0		45.8	40.8	K	9.5	57	9.5	41.1		9.4		10.1	58.1		9.5	35	14.5	27.5		7.8		31.5	44.3	B
7.0		56.2	37.4	K	9.0		10.4	44.9	B	9.1		12.5	53.3	K	9.2		48.5	32.5		9.5		45.1	11.1	
9.0		57.4	32.6	K	9.0		24.6	38.6		9.4		36.6	1.8		9.5	36	16.7	48.5		9.5	57	22.7	29.9	
9.0	41	6.8	53.8	B	8.5		43.7	17.5		8.3		36.6	55.4	K	9.5	37	17.0	55.2		9.4		29.7	44.8	
9.5		41.3	42.8		9.2		51.1	58.3		9.4	16	23.1	0.4		9.3		35.1	50.1		8.3		39.2	42.4	B
9.2	42	18.7	17.8		9.3	58	4.5	2.0		8.8		52.8	46.5		8.5	38	12.3	0.5	L	9.5	58	11.5	27.8	

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	8ᵘ—9ᵘ	+26°			9ᵘ	+26°			9ᵘ—10ᵘ	+26°			10ᵘ	+26°			10ᵘ—11ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.3	59 23.5	12.3	K	9.2	24 5.9	6.7	B	7.2	45 20.7	20.2	K	7.0	15 44.2	18.4	K	9.5	44 7.2	32.9	
8.5	0 51.6	24.6	K	9.4	29.4	0.9	B	8.6	26.5	46.5		9.5	17 14.3	17.8	B	9.4	30.6	51.0	B
8.8	1 52.6	59.6	K	9.1	32.1	4.9		8.9	33.5	58.0	K	9.4	18 5.5	20.3		9.5	38.8	51.0	B
9.5	53.5	23.6		9.5	58.9	33.3		9.1	56.0	53.4	B	9.4	14.2	16.3	B	8.5	50.1	19.2	K
9.0	2 9.4	43.6	K	8.9	25 20.7	57.8	B	9.3	47 22.3	46.2		8.6	18.1	29.2	K	7.0	45 40.2	58.3	K
9.5	11.3	34.7		9.3	22.1	59.3		8.0	50.0	41.4	K	9.5	27.2	31.1		9.0	46 24.5	53.1	
9.5	40.6	21.9		9.2	22.5	1.5		9.3	48 27.7	43.1		9.3	19 9.0	15.7		6.5	49.6	15.4	K
9.1	48.1	6.7		9.3	33.6	40.5		9.2	49 11.5	57.8	B	9.5	51.9	33.5		9.0	48 13.6	27.4	
8.8	3 36.0	38.4	K	9.5	41.0	49.8		9.2	28.7	21.5	B	9.5	58.5	31.5		9.5	14.9	31.5	
9.5	4 2.5	20.1		9.5	55.4	56.4		8.7	51 8.9	11.0		9.5	20 0.4	41.5		9.5	20.0	56.7	
8.4	57.0	1.4	L	9.5	26 3.6	5.4		8.3	24.7	51.3	K	9.2	11.6	19.1	K	9.4	27.7	52.8	
8.9	5 7.8	0.5	L	9.1	8.5	27.8		9.5	52 13.8	3.7		9.5	33.3	54.3	B	7.0	42.5	16.1	K
9.5	18.6	14.7		9.5	33.6	26.4		9.5	58.1	4.8		9.3	38.4	28.8		8.6	49 18.0	3.0	R
9.2	30.2	46.0	S	7.7	45.3	49.7	K	9.4	54 18.8	4.6		9.2	21 1.6	48.5		9.0	21.6	22.5	K
9.5	55.7	0.6		9.4	47.5	54.1		9.4	54.4	36 3		9.0	1.9	37.7	K	9.5	33.1	15.1	
9.2	6 8.3	22.8	K	9.5	27 4.7	14.0		9.4	55 14.4	23.3	B	9.2	33.0	57.7		8.6	50 4.8	56.0	K
9.0	8.9	8.6		9.0	6.3	59.1		9.2	19.9	27.0	K	8.8	33.3	54.8	K	9.5	14.2	24.7	
9.5	10.3	47.5		9.5	30.2	27.8		9.4	48.2	3.5		9.5	22 21.6	32.2		9.1	18.6	16.8	
9.5	48.3	35.8		9.5	49.3	18.8		9.5	58.2	13.7	B	9.4	25 57.3	51.4	B	8.4	54.7	28.0	
9.5	9 8.6	13.0		9.5	58.6	52.4	B	9.5	56 13.7	39.4		9.3	26 17.3	55.4	K	9.1	51 27.6	0.5	K
9.5	16.0	47.4		9.4	28 28.2	53.3		9.5	24.1	57.8		7.3	41.8	54.9	K	8.4	49.6	13.2	L
8.9	21.6	35.7	K	9.5	29 1.2	46.3		8.9	57 47.7	34.3		9.0	47.4	18.1		9.4	52.7	24.2	
9.5	24.4	53.3		9.5	7.1	9.2		9.5	48.1	19.5		9.5	27 38.7	50.4		8.6	59.7	4.2	K
9.2	10 2.3	48.5		9.5	16.4	48.7		9.3	58 22.0	43.9		8.6	28 46.8	55.2	K	9.5	52 26.2	39.8	
9.4	27.6	16.4		8.0	30 1.3	0.5	K	9.2	24.6	16.3	B	9.1	29 5.2	27.3		9.5	36.1	17.1	
9.5	40.1	19.5		9.1	35.6	55.0		9.5	34.7	4.4		8.7	30 2.2	13.7	K	8.7	36.5	5.9	K
6.7	47.0	51.1	K	8.7	36.9	34.0	R	9.5	43.2	6.2		9.1	11.3	40.8		8.9	53 16.7	0.8	
9.5	11 20.3	18.1		9.5	50.6	26.4		9.3	59 25.5	58.2		9.5	27.6	46.6		9.3	54 53.1	20.9	K
9.4	39.8	15.0		6.7	52.2	1.2	K	9.4	0 13.5	1.8	B	8.4	29.1	39.8	L	9.0	55 13.6	27.4	K
9.4	51.4	4.9		7.8	32 13.3	40.1	K	9.5	36.4	56.1		8.2	31 0.6	31.5	K	8.6	27.3	10.2	
8.5	54.3	19.9	K	6.5	33 17.6	34.0	K	8.5	54.3	13.0		9.5	20.9	53.1	B	6.8	56.1	33.5	K
8.0	12 47.5	37.4	L	9.5	34 2.9	24.0		9.5	1 58.0	32.9		9.5	32.0	6.5		9.5	57 33.7	1.2	
9.5	13 14.0	53.0		7.7	2.9	16.1	K	9.5	2 5.6	57.3		8.8	32 3.8	56.7	K	9.5	58 11.4	45.0	B
9.5	47.1	56.4		9.3	5.4	3.3		9.2	3 8.7	5.1	K	9.5	25.4	57.4		9.1	54.5	51.2	K
9.5	14 9.6	51.6		9.4	35 36.0	59.8		9.4	51.0	38.4		9.5	28.7	22.2		8.2	59 9.2	32.1	L
8.1	15.2	22.9	K	9.0	50.4	1.1		9.3	4 0.0	27.1	K	7.5	51.2	27.4	K	7.2	17.6	18.8	K
9.5	15 3.4	54.9		9.4	36 8.3	17.4		7.8	32.1	52.0	B	9.5	33 0.7	24.6		9.5	42.1	37.7	
7.0	42.1	31.3	K	9.5	44.6	25.7		9.5	33.0	56.2		9.4	3.6	35.0		9.2	48.3	46.2	
4.2	16 12.9	48.6	K	9.4	37 41.2	23.6		9.2	37.1	31.5	K	9.2	48.4	9.3	B	9.2	1 33.4	44.3	K
8.8	40.0	52.7	K	9.4	50.4	42.6		9.2	6 12.0	39.1	K	8.5	55.7	25.6	L	9.1	48.8	50.9	B
8.6	17 21.9	49.7	K	9.5	38 11.6	20.3		9.0	56.5	48.9		9.4	34 11.3	44.2		8.4	3 19.8	48.9	K
8.5	45.7	12.1	K	9.4	53.0	28.4		8.8	7 43.7	33.2		9.3	35 7.0	6.6	B	9.2	5 25.0	10.5	K
9.4	49.8	3.1		9.5	57.3	54.8		8.2	8 26.9	1.6	K	8.9	28.7	30.8	L	9.5	51.0	43.0	
8.4	18 16.8	59.0	K	9.5	39 3.9	58.8		6.2	35.2	6.0	K	9.5	37 6.4	20.5		7.5	6 49.6	30.7	K
9.5	17.3	25.4		9.2	14.1	53.8	B	7.5	47.0	34.9	K	8.4	38 6.9	19.5	L	9.1	7 11.3	58.5	K
9.1	19 17.0	16.4		9.3	55.8	59.1		9.3	9 33.5	59.2	K	8.2	11.6	31.9	L	9.4	55.3	32.2	B
9.3	37.2	30.6		9.5	40 47.1	58.8		9.5	10 19.2	35.3		9.0	19.2	45.3	K	9.1	8 42.5	36.2	K
9.0	40.1	33.0		9.3	41 14.3	33.1		9.4	11 14.2	58.9		8.4	21.2	22.0	L	9.3	58.8	0.9	
9.5	55.0	23.3		9.0	21.1	16.4	B	8.5	16.8	52.4	K	9.1	33.4	47.0	K	7.3	9 58.3	15.9	K
9.5	20 0.9	27.4		9.5	25.7	9.1		9.4	12 8.7	4.4		9.0	39 10.1	43.1	K	8.1	10 6.7	45.1	K
8.2	30.5	50.9	K	9.4	29.6	38.5		9.5	11.3	10.5		9.1	12.4	50.2	K	9.5	26.6	26.9	
9.5	37.0	35.7		9.3	30.0	16.7		8.5	23.6	23.8		9.3	49.7	11.6	B	8.8	40.3	1.6	K
9.5	21 18.2	30.9		8.7	41.8	3.9		9.5	13 4.2	51.8		8.8	40 3.1	13.1	L	9.2	50.0	21.1	
9.5	22 5.4	19.2		8.8	42 0.6	36.7		9.5	11.6	36.3		9.3	18.5	45.4	K	9.0	58.1	6.3	K
9.3	43.0	55.7		9.0	12.4	42.5		9.3	13.6	1.7		9.0	41 17.7	26.7	K	9.4	11 49.1	41.7	B
9.1	50.0	36.4		9.4	43 5.0	20.8		9.4	14 3.7	46.6		8.9	42 17.1	18.7	B	9.0	12 27.9	17.3	
8.9	23 14.4	25.0		8.6	25.7	59.4	K	8.7	19.1	13.7	K	7.7	34.6	25.3	K	9.5	13 19.2	15.5	B
9.5	38.0	52.0		9.1	44 4.9	24.3	R	9.5	45.6	38.8		9.1	43 9.2	44.2	K	9.5	57.3	46.5	
9.3	46.1	4.2		4.0	31.0	41.8	L	9.4	15 38.2	27.1	B	8.7	11.6	23.6	K	9.0	14 16.4	15.6	K
9.5	55.0	7.6		9.4	48.7	51.3		9.5	41.3	20.2		9.4	12.7	38.4		9.5	23.4	9.8	

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	11ᵘ	+26°			11ᵘ—12ᵘ	+26°			12ᵘ	+26°			12ᵘ—13ᵘ	+26°			13ᵘ	+26°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.5	15	41.5	57.1	9.0	44	35.4	31.9	K	7.1	8	50.3	33.9	K	9.5	35	21.0	3.9		9.5	8	25.3	57.1	
9.5		43.5	55.3	B	9.0		51.5	15.2		9.5	9	46.4	2.8		8.2		46.1	41.9	K	9.4	9	1.1	1.3	
9.3		46.0	16.0	K	9.4	45	6.5	59.4	B	8.2	10	31.3	22.6	B	6.8	36	9.5	55.2	K	9.2		14.3	29.4	K
9.0	16	8.3	41.5	K	9.5		29.9	7.2		7.3	11	22.5	59.9	K	8.8		27.5	33.9		8.0		23.7	39.7	K
9.1		41.8	9.4	K	9.0		41.4	24.7		9.5		27.3	1.6		7.5		27.5	27.4	R	9.5		27.3	1.1	
9.4		43.2	51.7		9.4	46	34.3	30.4	B	6.6		43.0	48.6	K	9.4	37	4.7	44.1		9.5	10	12.9	52.6	
9.3		59.0	33.5		9.1	47	15.9	35.6		9.4	12	30.6	1.2		9.5		39.6	16.7		9.4	11	50.0	33.1	
8.3	17	25.9	56.9	K	8.8		31.7	34.6		9.5		53.2	59.8		9.5	38	15.1	34.2		9.5	13	16.7	58.6	
9.2		44.7	13.3	K	9.3		48.3	47.7		6.3	13	1.5	48.7	K	9.5		24.0	3.3		9.5	14	6.4	6.0	
9.4		45.2	8.7		7.0		58.9	19.8	K	8.7		25.8	33.6	K	9.5	39	10.0	40.1		7.5	15	4.5	45.1	K
9.4	18	29.0	27.6		8.7	48	32.5	18.1	K	8.3		35.5	44.5	K	9.5		38.1	39.7		9.1		22.0	16.3	K
9.0	19	0.0	2.5		9.3		45.4	29.1		8.2		46.6	31.5	B	9.4		46.8	5.6		7.7		43.5	52.3	K
8.5		14.3	22.3	K	9.4		59.0	52.3		9.4	14	0.5	28.9		9.2	43	11.9	55.9	K	8.6		48.7	36.0	B
8.6		52.6	18.0	K	9.5	49	19.8	34.2		9.3		4.3	43.4		neb		21.8	17.0		9.5	16	18.3	46.6	
9.5		55.2	50.9		9.0		45.2	37.7	B	9.3		35.5	25.4		9.5	44	2.0	3.7		7.1		53.0	18.3	K
9.3	21	5.7	11.5		9.4		53.7	1.9		8.9		39.5	29.4	B	9.5		17.3	21.7		9.5	17	3.9	24.6	B
9.5		10.3	57.0		9.4	50	16.6	38.1	B	5.0	15	12.6	39.5	S	8.6		33.8	18.0	B	9.3		20.3	17.3	
8.2		21.2	10.8	K	9.5		54.1	46.8	B	8.5		13.7	38.0	B	8.9		44.6	25.9	B	9.5		50.5	28.6	
8.4		45.7	40.7	K	9.5	51	23.0	56.4		9.1		23.8	36.5		7.5		48.3	27.8	K	9.4	18	25.2	49.4	
9.3	22	9.3	58.1		9.5	52	15.4	18.7		8.8		50.5	38.7	K	9.5		54.7	20.0		8.4		30.9	17.5	K
9.5		22.7	53.4		9.5		30.9	25.0		9.5	16	18.3	51.0		9.0		57.3	14.8		8.7		47.3	25.1	K
7.5		29.2	7.2		8.7		41.3	50.7	K	9.5		36.5	56.1		8.5	45	5.6	8.9	K	9.5	19	52.8	56.2	
9.4	23	4.3	2.5		9.5		47.4	43.6		7.0		46.2	37.9	K	9.5		57.2	19.7		9.5	20	18.7	23.7	
9.2		7.7	15.0	B	9.5	53	21.0	15.6		5.3	17	2.3	53.8	K	8.6	48	23.6	31.4	K	9.5	21	36.7	27.8	
9.5		48.3	4.6		9.0		26.0	11.6		6.3		10.0	23.5	S	8.7		30.2	40.3	K	9.5	22	34.4	6.4	
9.2	24	22.6	49.7		8.4		57.2	30.9		9.5		39 4	28.3		9.5		45.7	2.9		9.2	25	45.2	35.7	K
9.1		41.7	13.9		9.5	54	20.5	14.3		8.9		47.0	19.4		9.1	49	1.7	49.2	K	9.5	26	13.7	16.1	
9.5		46.5	40.8		7.5	55	20.8	9.0		9.5	18	16.5	54.9		9.5	50	15.8	14.2		8.5		20.2	37.1	K
9.5	25	12.0	47.8		9.3		54.4	49.1		9.1		35.4	45.8		8.7		41.8	43.4	K	9.2		34.3	50.5	K
9.4		19.7	56.5		9.5		58.4	36.3	B	8.5		44.2	29.3	K	8.6	51	26.0	41.4	K	9.5	28	30.0	59.8	
8.4		53.3	55.9	K	9.3	56	1.0	16.7		8.8	19	32.2	57.0	K	9.5	52	38.5	37.5		9.4	29	10.5	5.1	
9.2	26	26.6	33.4	B	9.5		18.0	8.0		6.5	20	24.8	42.5	L	9.5		54.3	40.7		9.3		24.1	59.1	
9.5	27	18.0	48.8		9.4		20.5	36.0	B	7.2	21	29.8	41.5	K	9.5	53	33.5	54.5		8.2		55.7	37.7	K
9.5	28	0.5	9.2		9.5		26.3	9.6		6.0		40.7	42.9	K	9.3		36.6	46.0		9.0	30	28.9	53.2	K
8.5		9.4	48.4	K	9.1		46.4	39.8		9.3	22	31.9	2.8		9.0	54	7.9	23.8	K	9.5		57.6	59.8	
8.7		51.4	37.8		9.3	57	31.4	14.3		8.3		43.5	55.7	K	8.9		18.4	23.1	K	9.3		58.4	13.3	
8.0	29	48.9	35.9	L	9.3		49.3	24.5	B	9.5	23	53.0	51.1		9.5		19.2	6.4		9.2	31	3.3	9.4	
7.9		52.1	13.2		9.5	58	2.1	6.6	B	9.2	24	7.5	34.2		8.8	55	17.3	13.5		9.5		35.7	34.0	
8.1	30	16.4	11.8	K	8.8		32.9	29.4	K	8.2		20.7	40.1	K	9.5	56	26.3	5.6		9.4		55.6	28.8	
9.4	31	40.8	42.9	B	8.1		41.6	34.3	K	8.8	25	3.0	46.2	K	8.5		28.2	33.8	L	9.3	32	48.2	32.0	
7.8		55.3	6.7	K	9.5		50.4	25.6		8.7		49.4	45.9	K	9.1		44.3	12.4	K	8.0	33	14.7	40.2	K
9.4	32	16.5	33.1	B	9.5		58.2	2.9		9.5	26	28.3	43.5		9.5		58.2	34.8		9.2		43.2	35.0	K
7.3		37.1	56.9	K	9.3	59	22.4	44.3		9.5	27	9.5	14.6		9.5	57	9.5	5.9		9.0	34	17.7	42.6	K
7.4		41.9	35.0	K	9.3	0	12.2	42.4	B	9.3		53.5	6.0		9.5	58	24.5	4.2		9.5		31.2	30.5	
9.5	33	6.9	19.8		9.1		26.7	9.2		9.4	28	4.8	56.4		9.5		26.8	26.8		9.5		47.9	3.5	
9.5		19.4	5.4		9.5		29.6	44.2		9.5		5.0	50.0		9.5		37.7	42.0		9.1	35	17.2	22.0	
9.5	34	8.8	0.1		8.3		37.0	10.9	K	9.5		32.8	45.9		9.5	59	2.8	13.1		9.4		56.7	43.0	
7.8		18.4	44.2	K	9.5		48.8	7.9		9.1		49.1	32.9		9.5		33.4	53.2		8.5	37	25.5	1.6	K
9.5		54.1	5.7		9.5	1	30.3	45.9	B	7.8		49.1	13.3	K	9.3	0	27.1	8.4		9.5		39.8	18.6	
6.2	36	41.1	2.3	L	9.5		58.5	45.6	B	9.1		53.5	18.4	K	9.5	1	59.5	3.6		9.5	38	6.2	15.8	
9.5	37	8.4	21.2		8.6	2	44.6	41.9	K	neb	29	8.0	47.5		8.5	3	21.2	19.3	K	9.5	39	16.4	59.4	
9.5	38	8.9	46.4		9.1		55.8	2.4	K	8.6		27.5	35.0		9.4		24.2	40.5	B	9.4		31.6	7.1	
9.4		22.7	17.9	B	8.8	3	1.5	9.0	K	9.2	30	41.3	34.8		9.5	4	6.8	43.5		9.5		48.7	1.7	B
9.5	40	13.6	40.2		8.8		44.9	49.1	K	9.2	31	7.1	11.3		9.2	5	50.3	21.7	B	6.0		59.2	25.4	K
9.5		51.9	35.3		8.6	4	16.4	31.5	K	9.5		12.7	2.6		8.9	6	8.3	11.7	K	9.5	40	12.8	20.5	
9.5	42	42.2	33.3		5.7		31.2	40.5	K	9.5		48.0	4.4		9.5		14.8	23.5		9.5		37.1	1.0	
9.3	43	24.1	45.2		9.1		53.8	50.0	K	9.3	33	2.0	23.5		9.0		28.7	34.1	K	9.5	42	4.2	39.5	
9.4		33.8	15.3		9.0	5	1.0	22.7		9.3		6.0	25.6		9.2		43.2	37.2		9.3		37.3	36.8	
9.4		36.3	50.2	B	9.4		8.5	5.3		9.3		54.5	30.1	B	7.3		56.3	28.6	K	9.5	44	37.2	29.2	B
9.2		49.2	10.1		9.5		41.3	10.0		9.4	35	6.9	45.3		9.2	7	24.7	26.2		9.5	45	14.9	7.3	

2501—2560				2561—2620				2621—2680				2681—2740				2741—2800			
	13ᵘ—14ᵘ	+26°			14ᵘ	+26°			14ᵘ—15ᵘ	+26°			15ᵘ	+26°			15ᵘ—16ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	45 30.0	51.1	K	9.3	17 11.2	29.3	B	9.4	47 50.0	10.3		8.2	14 56.4	6.1	K	8.4	43 56.0	37.0	K
9.0	45.2	28.1		9.2	32.3	50.9		9.4	48 38.2	40.3		9.5	59.0	56.1		9.5	44 27.0	23.6	
9.4	46 34.7	23.4		8.0	40.2	22.6	L	8.5	49.0	9.8	K	9.1	15 24.0	25.4		9.5	42.6	13.0	
8.8	59.7	23.0	K	9.3	44.6	13.1		9.4	49 3.1	2.7		9.5	56.5	45.3		8.5	45.0	32.6	K
9.1	47 41.5	54.2	K	9.1	49.8	5.6	B	9.0	50 33.7	23.0		7.3	16 12.1	8.7	K	9.4	45 15.9	49.8	
9.3	54.7	1.3		8.6	18 14.8	18.5	K	8 9	34.6	31.3	K	9.5	19 1.6	36.0		9.3	46 24.5	58.6	
9.4	48 9.8	4.1		8.7	39.2	49.3	K	9.5	40.7	28.0		9.4	40.7	16.2		8.8	47 20.5	44.0	K
6.8	49 30.7	38.4	K	9.4	19 19.9	44.4		9.2	48.8	57.8		9.5	20 17.0	16.7		8.9	32.9	12.1	K
9.2	40.3	59.3		7.5	26.2	54.8	K	9.5	51 38.7	46.5		9.5	21 11.6	37.7		9.5	41.4	22.9	
9.3	43.3	55.9		9.4	40.0	30.2		9.5	44.1	40.6		8.9	50.7	47.7	K	9.5	48 12.8	42.5	
7.3	52 25.7	31.2	K	9.5	41.6	6.7		9.4	52 0.7	51.5		9.3	56.8	29.9		9.5	24.9	14.8	
9.4	52.7	44.4	B	8.2	20 2.6	50.9	K	9.2	16.0	12.8		8.1	22 18.3	7.0	K	9.5	49 5.2	9.3	B
9.5	53 16.6	2.2		9.5	49.8	28.5		9.5	22.6	31.3		9.2	58.5	3.6		8.3	10.2	55.5	K
9.4	54 7.7	38.5		8.7	21 49.7	53.9		9.5	29.8	48.5		7.3	23 48.0	0.2	K	8.3	16.8	26.3	K
9.5	13.2	40.9		7.0	22 17.2	29.9	K	9.5	56.5	37.3		9.5	24 0.9	53.2		9.3	32.9	19.1	
9.2	31.8	19.3		9.5	26 19.1	11.3		9.3	53 59.4	51.0		9.4	14.3	13.6		9.2	51 36.5	31.5	B
8.9	32.6	4.1	K	9.5	27 0.8	44.8		9.3	54 2.7	32.7		8.3	25 10.0	23.6	K	9.5	41.5	54.2	
9.1	56 36.7	44.7	K	9.1	15.0	9.5		9.1	24.0	36.1	L	9.3	10.3	6.6	B	9.2	49.5	9.9	
9.5	57 24.8	56.7		9.1	23.1	8.0	B	9.3	26.5	9.3		9.5	18.5	10.3		9.3	50.0	25.3	
9.5	43.2	1.9		9.0	36.2	28.7	K	8.7	33.2	22.9	K	9.5	26 34.0	59.5		9.1	52 7.3	40 0	
6.8	58 8.4	31.0	K	9.2	37.7	8.0	B	9.4	52.0	48.9		9.5	27 32.3	29.5		9.1	25.4	21.2	
8.8	12.2	32.4	L	9.5	58.9	13.2		9.5	52.0	25.3		9.5	28 0.8	32.2		8.4	32.8	57.2	K
8.9	49.6	50.8	K	9.4	28 44.3	12.7		9.4	55 16.8	54.2		9.0	29 16.0	29.0		8.8	54.1	33.6	
9.5	59 53.0	45.6		9.2	29 18.2	33.4		9.3	56 53.4	53.1	B	9.2	26.6	14.3		9.5	53 22.3	33.9	
8.9	55.7	24.8	L	9.2	57.8	45.9		9.4	59.5	57.1		9.3	30 9.2	57.8		9.5	26.9	20.1	
9.5	0 1.0	41.1		9.0	30 31.3	30.7	K	7.7	57 32.0	35.7	K	9.5	46.3	13.2		9.2	54 12.2	8.0	
9.4	51.2	23.0		9.4	43.8	42.0		8.0	58 27.1	2.0	K	9.2	51.7	42.2		7.7	55 2.8	34.6	K
9.5	2 11.8	54.7	B	9.4	31 5.4	1.6		9.5	12.5	54.0		8.3	31 46.1	6.5		9.0	25.4	14.1	B
8.5	43.9	7.1	K	9.4	33 24.8	45.9		9.4	59 27.1	9.2		9.5	52.0	25.3		8.2	28.9	48.0	K
8.1	3 6.7	30.7	K	8.3	53.8	26.1	L	9.4	32.5	40.8		9.5	32 6.7	17.7		9.5	31.8	15.6	
9.4	15.5	57.0		8.6	34 35.2	45.1	K	9.5	57.0	36.5		9.5	47.0	51.2		9.1	56 26.9	43.2	
9.5	22.2	28.2		7.9	35 24.5	35.1	K	9.5	0 5.3	16.3		8.0	53.1	13.2	B	9.1	29.5	56.0	K
9.3	49.1	32.6		9.5	41.3	42.4		9.1	1 2.7	27.0		9.5	33 20.0	53.7		9.1	42.5	12.6	B
9.2	4 19.9	10.1		9.4	36 11.3	30.1	B	9.5	27.3	30.8		9.5	34 19.0	47.0		9.4	44.9	15.1	
9.2	34.8	0.3		9.5	38 29.7	51.8		9.5	2 1.0	27.0		9.4	20.8	19.8		9.5	57 13.2	54.4	
9.5	59.7	52.5		9.5	38.5	22.9		6.3	8.8	52.1	K	9.2	37.0	37.8		8.5	24.8	49.4	K
9.1	5 51.8	1.5		9.5	39 8.3	2.6		9.4	22.2	11.4		9.5	46.9	45.0		9.5	39.9	4.0	
9.1	6 9.2	27.8	B	8.2	40 5.8	33.0	K	8.4	4 2.7	18.4	L	9.5	48.9	6.3		9.5	49.6	55.9	
9.3	36.3	32.7		9.4	28.1	57.1	B	9.4	14.4	5.0	B	8.5	35 30.5	11.8	B	9.5	56.8	40.1	
9.1	54.8	32.7		9.4	33.7	24.7		9.5	20.7	18.4		8.9	31.7	33.3		9.4	58 23.2	25.2	
9.2	7 9.3	9.1		9.4	49.4	20.2		9.5	27.3	48.0		9.1	36 14.0	58.1		9.5	59 12.9	46.3	
8.5	10.1	47.3	K	9.4	41 25.6	48.4	B	9.5	50.0	53.7		4.0	40.0	45.6	K	9.5	0 4.1	2.1	
9.5	17.3	36.1		8.3	27.2	4.0	K	9.5	6 25.4	52.1		9.5	54.6	44.7	B	9.3	12.3	56.9	
8.8	8 23.2	7.8		9.5	34.5	27.3		9.4	48.1	3.4	B	9.5	37 22.2	7.6		9.5	42.8	7.2	
9.5	9 4.7	0.5		9.5	45.6	34.7	B	9.2	7 39.1	10.1		9.5	37.0	43.9		9.2	55.5	39.0	K
8.6	52.8	19.6	L	8.8	42 37.2	19.1		9.0	49.0	17.4	K	9.1	38 12.7	43.6	K	9.3	55.5	29.3	
8.6	10 5.0	36.8	L	8.7	43 1.6	39.2	K	9.4	8 29.0	41.8		9.5	40 30.5	27.7		9.3	1 17.2	3.0	
9.0	8.7	48.6	K	8.4	27.2	21.8		9.5	30.0	52.0		8.8	41 14.4	18.8		9.4	19.1	11.6	
9.3	12.2	29.7		9.5	36.7	21.5		9.5	30.3	56.1		9.1	25.0	59.2	K	9.5	31.2	40.4	
9.4	32.4	42.1		9.3	37.9	0.8		6.8	9 26.8	11.0	K	9.2	46.6	56.0		9.2	2 36.0	7.0	
9.4	41.2	42.3	B	9.3	44 18.6	13.9		8.2	10 39.3	16.7	K	9.0	59.3	12.1	L	7.6	3 47.2	23.1	K
9.2	13 8.6	18.9		9.5	18.7	42.0		9.5	52.0	30.3		9.3	42 4.0	23.2		8.9	55.2	9.9	K
8.4	29.3	39.3	K	9.5	28.5	1.7		9.1	11 16.8	51.0		9.1	4.7	44.6	K	9.5	56.8	37.3	
7.0	14 14.2	44.2	K	8.9	45 16.6	43.4		9.4	45.7	32.0	B	9.3	6.6	51.6		9.1	4 35.9	20.8	
9.2	59.0	45.2		9.4	22.2	35.4		9.5	54.3	31.5		8.7	21.8	26.6	K	9.4	41.1	32.5	B
9.2	15 2.0	43.9		9.5	31.2	42.7		8.4	12 30.3	19.1	L	9.5	45.3	53.3		9.5	52.2	31.4	
9.0	21.7	43.7	B	9.4	54.1	14.7		8.0	50.5	13.6	B	4.5	43 31.0	31.5	K	8.1	58.3	47.0	K
9.3	34.2	50.5		9.4	46 18.7	46.1		9.5	13 32.7	49.8		8.3	35.5	5.8	K	9.5	5 2.3	57.5	B
8.0	16 0.3	11.3	K	9.4	47.0	12.8		9.5	49.7	37.4		9.1	37.1	57.3		8.8	37.9	48.4	K
9.2	41.5	53.4		9.4	47 34.2	32.3		9.1	14 3.0	30.5	K	9.3	47.5	13.1		9.2	6 14.8	51.2	

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	11ˢ	+26°			11ˢ—12ˢ	+26°			12ˢ	+26°			12ˢ—13ˢ	+26°			13ˢ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	15 41.5	57.1		9.0	44 35.4	31.9	K	7.1	8 50.3	33.9	K	9.5	35 21.0	3.9		9.5	8 25.3	57.1	
9.5	43.5	55.3	B	9.0	51.5	15.2		9.5	9 46.4	2.8		8.2	46.1	41.9	K	9.4	9 1.1	1.3	
9.3	46.0	16.0	K	9.4	45 6.5	59.4	B	8.2	10 31.3	22.6	B	6.8	36 9.5	55.2	K	9.2	14.3	29.4	K
9.0	16 8.3	41.5	K	9.5	29.9	7.2		7.3	11 22.5	59.9	K	8.8	27.5	33.9		8.0	23.7	39.7	K
9.1	41.8	9.4	K	9.0	41.4	24.7		9.5	27.3	1.6		7.5	27.5	27.4	R	9.5	27.3	1.1	
9.4	43.2	51.7		9.4	46 34.3	30.4	B	6.6	43.0	48.6	K	9.4	37 4.7	44.1		9.5	10 12.9	52.6	
9.3	59.0	33.5		9.1	47 15.9	35.6		9.4	12 30.6	1.2		9.5	39.6	16.7		9.4	11 50.0	33.1	
8.3	17 25.9	56.9	K	8.8	31.7	34.6		9.5	53.2	59.8		9.5	38 15.1	34.2		9.5	13 16.7	58.6	
9.2	44.7	13.3	K	9.3	48.3	47.7		6.3	13 1.5	48.7	K	9.5	24.0	3.3		9.5	14 6.4	6.0	
9.4	45.2	8.7		7.0	58.9	19.8	K	8.7	25.8	33.6	K	9.5	39 10.0	40.1		7.5	15 4.5	45.1	K
9.4	18 29.0	27.6		8.7	48 32.5	18.1	K	8.3	35.5	44.5	K	9.5	38.1	39.7		9.1	22.0	16.3	K
9.0	19 0.0	2.5		9.3	45.4	29.1		8.2	46.6	31.5	B	9.4	46.8	5.6		7.7	43.5	52.3	K
8.5	14.3	22.3	K	9.4	59.0	52.3		9.4	14 0.5	28.9		9.2	43 11.9	55.9	K	8.6	48.7	36.0	B
8.6	52.6	18.0	K	9.5	49 19.8	34.2		9.3	4.3	43.4		neb	21.8	17.0		9.5	16 18.3	46.6	
9.5	55.2	50.9		9.0	45.2	37.7	B	9.3	35.5	25.4		9.5	44 2.0	3.7		7.1	53.0	18.3	K
9.3	21 5.7	11.5		9.4	53.7	1.9		8.9	39.5	29.4	B	9.5	17.3	21.7		9.5	17 3.9	24.6	B
9.5	10.3	57.0		9.4	50 16.6	38.1	B	5.0	15 12.6	39.5	S	8.6	33.8	18.0	B	9.3	20.3	17.3	
8.2	21.2	10.8	K	9.5	54.1	46.8	B	8.5	13.7	38.0	B	8.9	44.6	25.9	B	9.5	50.5	28.6	
8.4	45.7	40.7	K	9.5	51 23.0	56.4		9.1	23.8	36.5		7.5	48.3	27.8	K	9.4	18 25.2	49.4	
9.3	22 9.3	58.1		9.5	52 15.4	18.7		8.8	50.5	38.7	K	9.5	54.7	20.0		8.4	30.9	17.5	K
9.5	22.7	53.4		9.5	30.9	25.0		9.5	16 18.3	51.0		9.0	57.3	14.8		8.7	47.3	25.1	K
7.5	29.2	7.2		8.7	41.3	50.7	K	9.5	36.5	56.1		8.5	45 5.6	8.9	K	9.5	19 52.8	56.2	
9.4	23 4.3	2.5		9.5	47.4	43.6		7.0	46.2	37.9	K	9.5	57.2	19.7		9.5	20 18.7	23.7	
9.2	7.7	15.0	B	9.5	53 21.0	15.6		5.3	17 2.3	53.8	K	8.6	48 23.6	31.4	K	9.5	21 36.7	27.8	
9.5	48.3	4.6		9.0	26.0	11.6		6.3	10.0	23.5	S	8.7	30.2	40.3	K	9.5	22 34.4	6.4	
9.2	24 22.6	49.7		8.4	57.2	30.9		9.5	39 4	28.3		9.5	45.7	2.9		9.2	25 45.2	35.7	K
9.1	41.7	13.9		9.5	54 20.5	14.3		8.9	47.0	19.4		9.1	49 1.7	49.2	K	9.5	26 13.7	16.1	
9.5	46.5	40.8		7.5	55 20.8	9.0		9.5	18 16.5	54.9		9.5	50 15.8	14.2		8.5	20.2	37.1	K
9.5	25 12.0	47.8		9.3	54.4	49.1		9.1	35.4	45.8		8.7	41.8	43.4	K	9.2	34.3	50.5	K
9.4	19.7	56.5		9.5	58.4	36.3	B	8.5	44.2	29.3	K	8.6	51 26.0	41.4	K	9.5	28 30.0	59.8	
8.4	53.3	55.9	K	9.3	56 1.0	16.7		8.8	19 32.2	57.0	K	9.5	52 38.5	37.5		9.4	29 10.5	5.1	
9.2	26 26.6	33.4	B	9.5	18.0	8.0		6.5	20 24.8	42.5	L	9.5	54.3	40.7		9.3	24.1	59.1	
9.5	27 18.0	48.8		9.4	20.5	36.0	B	7.2	21 29.8	41.5	K	9.5	53 33.5	54.5		8.2	55.7	37.7	K
9.5	28 0.5	9.2		9.5	26.3	9.6		6.0	40.7	42.9	K	9.3	36.6	46.0		9.0	30 28.9	53.2	K
8.5	9.4	48.4	K	9.1	46.4	39.8		9.3	22 31.9	2.8		9.0	54 7.9	23.8	K	9.5	57.6	59.8	
8.7	51.4	37.8		9.3	57 31.4	14.3		8.3	43.5	55.7	K	8.9	18.4	23.1	K	9.3	58.4	13.3	
8.0	29 48.9	35.9	L	9.3	49.3	24.5	B	9.5	23 53.0	51.1		9.5	19.2	6.4		9.2	31 3.3	9.4	
7.9	52.1	13.2		9.5	58 2.1	6.6	B	9.2	24 7.5	34.2		8.8	55 17.3	13.5		9.5	35.7	34.0	
8.1	30 16.4	11.8	K	8.8	32.9	29.4	K	8.2	20.7	40.1	K	9.5	56 26.3	5.6		9.4	55.6	28.8	
9.4	31 40.8	42.9	B	8.1	41.6	34.3	K	8.8	25 3.0	46.2	K	8.5	28.2	33.8	L	9.3	32 48.2	32.0	
7.8	55.3	6.7	K	9.5	50.4	25.6		8.7	49.4	45.9	K	9.1	44.3	12.4	K	8.0	33 14.7	40.2	K
9.4	32 16.5	33.1	B	9.5	58.2	2.9		9.5	26 28.3	43.5		9.5	58.2	34.8		9.2	43.2	35.0	K
7.3	37.1	56.9	K	9.3	59 22.4	44.3		9.5	27 9.5	14.6		9.5	57 9.5	5.9		9.0	34 17.7	42.6	K
7.4	41.9	35.0	K	9.3	0 12.2	42.4	B	9.3	53.5	6.0		9.5	58 24.5	4.2		9.5	31.2	30.5	
9.5	33 6.9	19.8		9.1	26.7	9.2		9.4	28 4.8	56.4		9.5	26.8	26.8		9.5	47.9	3.5	
9.5	19.4	5.4		9.5	29.6	44.2		9.5	5.0	50.0		9.5	37.7	42.0		9.1	35 17.2	22.0	
9.5	34 8.8	0.1		8.3	37.0	10.9	K	9.5	32.8	45.9		9.5	59 2.8	13.1		9.4	56.7	43.0	
7.8	18.4	44.2	K	9.5	48.8	7.9		9.1	49.1	32.9		9.5	33.4	53.2		8.5	37 25.5	1.6	K
9.5	54.1	5.7		9.5	1 30.3	45.9	B	7.8	49.1	13.3	K	9.3	0 27.1	8.4		9.5	39.8	18.6	
6.2	36 41.1	2.3	L	9.5	58.5	45.6	B	9.1	53.5	18.4	K	9.5	1 59.5	3.6		9.5	38 6.2	15.8	
9.5	37 8.4	21.2		8.6	2 44.6	41.9	K	neb	29 8.0	47.5		8.5	3 21.2	19.3	K	9.5	39 16.4	59.4	
9.5	38 8.9	46.4		9.1	55.8	2.4	K	8.6	27.5	35.0		9.4	24.2	40.5	B	9.4	31.6	7.1	
9.4	22.7	17.9	B	8.8	3 1.5	9.0	K	9.2	30 41.3	34.8		9.5	4 6.8	43.5		9.5	48.7	1.7	B
9.5	40 13.6	40.2		8.8	44.9	49.1	K	9.2	31 7.1	11.3		9.2	5 50.3	21.7	B	6.0	59.2	25.4	K
9.5	51.9	35.3		8.6	4 16.4	31.5	K	9.5	12.7	2.6		8.9	6 8.3	11.7	K	9.5	40 12.8	20.5	
9.5	42 42.2	33.3		5.7	31.2	40.5	K	9.5	48.0	4.4		9.5	14.8	23.5		9.5	37.1	1.0	
9.3	43 24.1	45.2		9.1	53.8	50.0	K	9.3	33 2.0	23.5		9.0	28.7	34.1	K	9.5	42 4.2	39.5	
9.4	33.8	15.3		9.0	5 1.0	22.7		9.3	6.0	25.6		9.2	43.2	37.2		9.3	37.3	36.8	
9.4	36.3	50.2	B	9.4	8.5	5.3		9.3	54.5	30.1	B	7.3	56.3	28.6	K	9.5	44 37.2	29.2	B
9.2	49.2	10.1		9.5	41.3	10.0		9.4	35 6.9	45.3		9.2	7 24.7	26.2		9.5	45 14.9	7.3	

2501—2560				2561—2620				2621—2680				2681—2740				2741—2800			
	13ᵘ—14ᵘ	+26°			14ᵘ	+26°			14ᵘ—15ᵘ	+26°			15ᵘ	+26°			15ᵘ—16ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	45 30.0	51.1	K	9.3	17 11.2	29.3	B	9.4	47 50.0	10.3		8.2	14 56.4	6.1	K	8.4	43 56.0	37.0	K
9.0	45.2	28.1		9.2	32.3	50.9		9.4	48 38.2	40.3		9.5	59.0	56.1		9.5	44 27.0	23.6	
9.4	46 34.7	23.4		8.0	40.2	22.6	L	8.5	49.0	9.8	K	9.1	15 24.0	25.4		9.5	42.6	13.0	
8.8	59.7	23.0	K	9.3	44.6	13.1		9.4	49 3.1	2.7		9.5	56.5	45.3		8.5	45.0	32.6	K
9.1	47 41.5	54.2	K	9.1	49.8	5.6	B	9.0	50 33.7	23.0		7.3	16 12.1	8.7	K	9.4	45 15.9	49.8	
9.3	54.7	1.3		8.6	18 14.8	18.5	K	8 9	34.6	31.3	K	9.5	19 1.6	36.0		9.3	46 24.5	58.6	
9.4	48 9.8	4.1		8.7	39.2	49.3	K	9.5	40.7	28.0		9.4	40.7	16.2		8.8	47 20.5	44.0	K
6.8	49 30.7	38.4	K	9.4	19 19.9	44.4		9.2	48.8	57.8		9.5	20 17.0	16.7		8.9	32.9	12.1	K
9.2	40.3	59.3		7.5	26.2	54.8	K	9.5	51 38.7	46.5		9.5	21 11.6	37.7		9.5	41.4	22.9	
9.3	43.3	55.9		9.4	40.0	30.2		9.5	44.1	40.6		8.9	50.7	47.7	K	9.5	48 12.8	42.5	
7.3	52 25.7	31.2	K	9.5	41.6	6.7		9.4	52 0.7	51.5		9.3	56.8	29.9		9.5	24.9	14.8	
9.4	52.7	44.4	B	8.2	20 2.6	50.9	K	9.2	16.0	12.8		8.1	22 18.3	7.0	K	9.5	49 5.2	9.3	B
9.5	53 16.6	2.2		9.5	49.8	28.5		9.5	22.6	31.3		9.2	58.5	3.6		8.3	10.2	55.5	K
9.4	54 7.7	38.5		8.7	21 49.7	53.9		9.5	29.8	48.5		7.3	23 48.0	0.2	K	8.3	16.8	26.3	K
9.5	13.2	40.9		7.0	22 17.2	29.9	K	9.5	56.5	37.3		9.5	24 0.9	53.2		9.3	32.9	19.1	
9.2	31.8	19.3		9.5	26 19.1	11.3		9.3	53 59.4	51.0		9.4	14.3	13.6		9.2	51 36.5	31.5	B
8.9	32.6	4.1	K	9.5	27 0.8	44.8		9.3	54 2.7	32.7		8.3	25 10.0	23.6	K	9.5	41.5	54.2	
9.1	56 36.7	44.7	K	9.1	15.0	9.5		9.1	24.0	36.1	L	9.3	10.3	6.6	B	9.2	49.5	9.9	
9.5	57 24.8	56.7		9.1	23.1	8.0	B	9.3	26.5	9.3		9.5	18.5	10.3		9.3	50.0	25.3	
9.5	43.2	1.9		9.0	36.2	28.7	K	8.7	33.2	22.9	K	9.5	26 34.0	59.5		9.1	52 7.3	40 0	
6.8	58 8.4	31.0	K	9.2	37.7	8.0	B	9.4	52.0	48.9		9.5	27 32.3	29.5		9.1	25.4	21.2	
8.8	12.2	32.4	L	9.5	58.9	13.2		9.5	52.0	25.3		9.5	28 0.8	32.2		8.4	32.8	57.2	K
8.9	49.6	50.8	K	9.4	28 44.3	12.7		9.4	55 16.8	54.2		9.0	29 16.0	29.0		8.8	54.1	33.6	
9.5	59 53.0	45.6		9.2	29 18.2	33.4		9.3	56 53.4	53.1	B	9.2	26.6	14.3		9.5	53 22.3	33.9	
8.9	55.7	24.8	L	9.2	57.8	45.9		9.4	59.5	57.1		9.3	30 9.2	57.8		9.5	26.9	20.1	
9.5	0 1.0	41.1		9.0	30 31.3	30.7	K	7.7	57 32.0	35.7	K	9.5	46.3	13.2		9.2	54 12.2	8.0	
9.4	51.2	23.0		9.4	43.8	42.0		8.0	58 27.1	2.0	K	9.2	51.7	42.2		7.7	55 2.8	34.6	K
9.5	2 11.8	54.7	B	9.4	31 5.4	1.6		9.5	12.5	54.0		8.3	31 46.1	6.5		9.0	25.4	14.1	B
8.5	43.9	7.1	K	9.4	33 24.8	45.9		9.4	59 27.1	9.2		9.5	52.0	25.3		8.2	28.9	48.0	K
8.1	3 6.7	30.7	K	8.3	53.8	26.1	L	9.4	32.5	40.8		9.5	32 6.7	17.7		9.5	31.8	15.6	
9.4	15.5	57.0		8.6	34 35.2	45.1	K	9.5	57.0	36.5		9.5	47.0	51.2		9.1	56 26.9	43.2	
9.5	22.2	28.2		7.9	35 24.5	35.1	K	9.5	0 5.3	16.3		8.0	53.1	13.2	B	9.1	29.5	56.0	K
9.3	49.1	32.6		9.5	41.3	42.4		9.1	1 2.7	27.0		9.5	33 20.0	53.7		9.1	42.5	12.6	B
9.2	4 19.9	10.1		9.4	36 11.3	30.1	B	9.5	27.3	30.8		9.5	34 19.0	47.0		9.4	44.9	15.1	
9.2	34.8	0.3		9.5	38 29.7	51.8		9.5	2 1.0	27.0		9.4	20.8	19.8		9.5	57 13.2	54.4	
9.5	59.7	52.5		9.5	38.5	22.9		6.3	8.8	52.1	K	9.2	37.0	37.8		8.5	24.8	49.4	K
9.1	5 51.8	1.5		9.5	39 8.3	2.6		9.4	22.2	11.4		9.5	46.9	45.0		9.5	39.9	4.0	
9.1	6 9.2	27.8	B	8.2	40 5.8	33.0	K	8.4	4 2.7	18.4	L	9.5	48.9	6.3		9.5	49.6	55.9	
9.3	36.3	32.7		9.4	28.1	57.1	B	9.4	14.4	5.0	B	8.5	35 30.5	11.8	B	9.5	56.8	40.1	
9.1	54.8	32.7		9.4	33.7	24.7		9.5	20.7	18.4		8.9	31.7	33.3		9.4	58 23.2	25.2	
9.2	7 9.3	9.1		9.4	49.4	20.2		9.5	27.3	48.0		9.1	36 14.0	58.1		9.5	59 12.9	46.3	
8.5	10.1	47.3	K	9.4	41 25.6	48.4	B	9.5	50.0	53.7		4.0	40.0	45.6	K	9.5	0 4.1	2.1	
9.5	17.3	36.1		8.3	27.2	4.0	K	9.5	6 25.4	52.1		9.5	54.6	44.7	B	9.3	12.3	56.9	
8.8	8 23.2	7.8		9.5	34.5	27.3		9.4	48.1	3.4	B	9.5	37 22.2	7.6		9.5	42.8	7.2	
9.5	9 4.7	0.5		9.5	45.6	34.7	B	9.2	7 39.1	10.1		9.5	37.0	43.9		9.2	55.5	39.0	K
8.6	52.8	19.6	L	8.8	42 37.2	19.1		9.0	49.0	17.4	K	9.1	38 12.7	43.6	K	9.3	55.5	29.3	
8.6	10 5.0	36.8	L	8.7	43 1.6	39.2	K	9.4	8 29.0	41.8		9.5	40 30.5	27.7		9.3	1 17.2	3.0	
9.0	8.7	48.6	K	8.4	27.2	21.8		9.5	30.0	52.0		8.8	41 14.4	18.8		9.4	19.1	11.6	
9.3	12.2	29.7		9.5	36.7	21.5		9.5	30.3	56.1		9.1	25.0	59.2	K	9.5	31.2	40.4	
9.4	32.4	42.1		9.3	37.9	0.8		6.8	9 26.8	11.0	K	9.2	46.6	56.0		9.2	2 36.0	7.0	
9.4	41.2	42.3	B	9.3	44 18.6	13.9		8.2	10 39.3	16.7	K	9.0	59.3	12.1	L	7.6	3 47.2	23.1	K
9.2	13 8.6	18.9		9.5	18.7	42.0		9.5	52.0	30.3		9.3	42 4.0	23.2		8.9	55.2	9.9	K
8.4	29.3	39.3	K	9.5	28.5	1.7		9.1	11 16.8	51.0		9.1	4.7	44.6	K	9.5	56.8	37.3	
7.0	14 14.2	44.2	K	8.9	45 16.6	43.4		9.4	45.7	32.0	B	9.3	6.6	51.6		9.1	4 35.9	20.8	
9.2	59.0	45.2		9.4	22.2	35.4		9.5	54.3	31.5		8.7	21.8	26.6	K	9.4	41.1	32.5	B
9.2	15 2.0	43.9		9.5	31.2	42.7		8.4	12 30.3	19.1	L	9.5	45.3	53.3		9.5	52.2	31.4	
9.0	21.7	43.7	B	9.4	54.1	14.7		8.0	50.5	13.6	B	4.5	43 31.0	31.5	K	8.1	58.3	47.0	K
9.3	34.2	50.5		9.4	46 18.7	46.1		9.5	13 32.7	49.8		8.3	35.5	5.8	K	9.5	5 2.3	57.5	B
8.0	16 0.3	11.3	K	9.4	47.0	12.8		9.5	49.7	37.4		9.1	37.1	57.3		8.8	37.9	48.4	K
9.2	41.5	53.4		9.4	47 34.2	32.3		9.1	14 3.0	30.5	K	9.3	47.5	13.1		9.2	6 14.8	51.2	

2801—2860					2861—2920					2921—2980					2981—3040					3041—3100				
	16ᵘ		+26°			16ᵘ		+26°			16ᵘ–17ᵘ		+26°			17ᵘ		+26°			17ᵘ		+26°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
8.2	6	26.6	48.9	K	9.5	28	50.8	22.3		9.0	50	48.9	17.9		9.4	9	12.9	51.9	B	9.2	27	39.5	11.8	
9.5		41.5	43.0		9.4	29	14.1	20.6		9.4	51	45.2	23.3		9.5		14.5	55.7		9.5		49.5	53.0	
9.4	7	3.8	48.0		8.8		39.3	46.7	K	9.5	52	42.6	3.3		9.4		40.5	47.2		8.5	28	6.1	47.5	L
8.5		10.0	54.0	K	7.7	30	55.0	49.2	K	9.2		44.6	51.2		9.5		54.3	38.0		9.4		13.9	12.1	B
9.3		37.9	22.9		9.3	31	3.1	14.7	K	9.5		50.5	20.7		9.4	10	8.7	14.1	B	9.0		49.2	30.0	
9.4	8	41.3	54.4	R	9.4		3.6	25.6		9.5		53.5	13.1	B	9.5		10.4	32.7		9.5	29	5.6	54.8	
9.4	9	0.1	35.7	K	9.5		11.3	54.3		9.5		55.7	21.5	B	9.5		15.1	29.8		9.1		20.7	30.3	
9.4		8.4	0.9		9.4		12.9	58.9		9.0	53	43.8	50.1	K	9.2		21.5	23.9	B	9.0	30	12.6	4.0	L
8.1		44.0	5.7	L	9.5		55.2	6.6		9.2		47.6	10.9		9.3		40.2	46.1		9.3		26.5	20.0	
9.5		44.9	48.0		9.5		59.1	13.7		8.9	54	3.6	40.1	K	9.0		47.1	44.1	S	9.3		56.3	32.0	B
9.4		50.0	15.8		9.5	32	35.8	41.6		9.5		17.7	17.8		9.3	11	8.7	11.0	B	8.8		57.2	37.9	K
9.5	10	30.7	40.8		9.0	33	20.8	56.0	K	8.2		24.3	27.7	K	8.0		12.1	52.3	K	9.2	31	10.0	51.7	K
9.4		35.4	58.4	R	9.3		22.4	45.8		9.1		41.3	22.9	K	8.5		14.9	13.4	K	8.5	32	53.8	37.2	K
9.5		40.5	22.8		9.0		35.9	25.9	K	8.0		49.0	41.2	K	7.5		18.0	2.7	K	8.1	33	23.8	50.7	K
9.5	11	18.9	50.9		9.5	34	15.5	45.9		9.5		50.5	28.2		9.5		48.6	22.4		9.4		29.5	22.2	B
8.8	12	9.1	12.8	S	9.4	35	8.1	5.6		9.2	55	59.4	3.8		9.5		50.0	47.8		9.3	34	47.2	24.1	
6.5		23.2	15.1	L	9.0		10.5	48.8	K	8.6	56	48.5	47.6	K	9.5		57.9	55.5		9.3		53.4	5.6	
9.4		38.1	11.7	B	9.4		11.8	7.2	K	9.3		54.8	57.9		9.5	12	38.4	11.5		9.5		58.9	15.4	
9.2		44.0	23.9	B	7.3		37.6	21.9	K	9.4	57	12.5	52.7		9.5	13	18.3	10.1		9.5		58.9	32.2	
9.4		50.1	23.7	B	9.4		50.7	24.3		9.5		31.3	59.2		9.4		39.3	1.2	B	9.0	35	9.9	2.2	
9.4	13	10.6	49.4	B	9.3		51.4	27 3	B	9.4	58	22.3	43.0	B	9.5		40.6	49.8		9.5		26.2	47.9	
9.3		13.0	14.3		7.1	36	58.5	6.9	K	9.0		27.6	38.2	K	9.0	14	27.9	21.7		9.1		35.7	14.5	
9.5		20.7	12.5	B	9.2	37	5.6	47.5		9.1		43.6	48.5		8.7		39.9	41.7		9.2		54.7	30.9	B
8.5		37.2	21.2	K	9.5		6.9	28.4		8.5	59	10.3	28.9	K	9.5	15	16.6	34.5		9.3	36	27.1	36.5	
9.5		39.2	37.5		8.0		10.7	19.3	K	9.3		36.4	58.3		8.2		28.7	6.7	K	9.0		35.0	3.1	
9.5	14	9.5	24.2		9.5		26.3	8.5		8.0		43.2	40.0	L	9.2		36.6	20.7		7.9		48.4	38.2	K
7.8		35.3	14.8	K	9.4		27.2	16.4		8.6		57.6	39.5	L	8.8		44.5	10.6	K	9.3	37	5.3	50.0	B
8.3		37.6	26.5	K	9.0		41.9	27.5	K	9.0	0	11.9	58.7	K	9.1	16	15.5	6.2		9.1		4.2	33 4	K
9.3		58.1	47.7		8.3		56.9	30.6	K	9.0		15.8	53.2	K	8.6		18.2	13.3	K	9.3		14.2	57.8	K
9.5	15	2.4	20.5		9.5		59.1	53.5	B	8.7		26.0	25.5	K	8.5		18.6	40.3		9.5		53.1	16.6	
9.3		16.4	9.7	B	9.4	38	2.0	54.3	B	9.0		26.8	52.3	K	9.2		56.9	39.6	K	9.4		55.7	57.5	
9.4		24.5	8.7		9.5		24.7	36.9		8.8		27.2	42.1	K	9.4	17	31.1	55.1		9.2	38	17.6	23.8	
9.5	16	7.8	28.9		9.5	39	25.8	58.0		9.4		43.3	38.0		9.5		50.0	35.2		9.4	39	0.3	12.2	B
9.5		46.2	33.6		8.4		38.6	51.8	R	8.6		49.0	8.3	L	9.5	18	43.8	14.5		9.4		10.1	20.1	
8.9	18	24.3	46.6	K	8.9		42.3	3.9	K	9.5		52.4	23.0	B	9.5		50.0	55.2		9.0	40	45.4	11.5	
9.5		52.5	50.1		8.2	40	7.0	18.3	K	9.4		54.5	16.2		8.5	19	24.2	39.2	K	8.8		49.7	13.2	
9.2		56.5	46.9	K	9.3		35.3	16.5		9.4	1	7.2	16.5	B	8.7		38.9	53.9	K	9.5	41	4.4	19.6	
9.4	19	17.5	22.3		9.5		54.0	3.2	B	9.5		19.0	3.2		9.0	21	0.6	32.8	K	9.4		13.7	27.8	
9.4		47.6	6.1		9.4	41	4.4	40.1		8.7		42.1	44.4	K	9.5		1.4	48.6		9.3		18.7	34.2	
9.3		56.0	28.1		9.3		8.4	3.8		9.0	2	34.2	48.2	K	9.0		1.4	56.9	K	9.4		18.9	0.8	
9.2	20	18.1	1.3	B	9.3		12.9	53.5		9.4		47.6	31.3		9.1		44.1	24.2	K	9.0	42	3.7	59.4	
9.4		56.9	39.9		9.4		16.6	21.6	B	9.5	3	37.8	55.5		9.1		45.4	32.7	K	9.1		18.2	11.4	
9.2	21	25.4	33.1	B	9.1		38.0	49.9		7.2	4	5.6	38.0	K	7.9		46.2	54.8	K	9.5		25.0	37.3	
9.5		51.3	26.4		7.8	42	38.7	51.4	K	9.4	5	23.6	28.6		9.1	22	2.9	20.0		9.5		38.4	22.9	
6.5		56.6	18.5	K	9.5	43	6.2	39.4		9.4		31.5	57.8	B	9.1		3.6	46.8		9.5	43	22.8	52.2	
8.6	22	0.7	51.6	K	8.3		37.0	16.9	L	9.5		42.9	5.6		8.6		34.7	7.1		9.5		40.5	39.8	
9.4		49.9	18.7		7.0	44	8.2	27.6	K	8.5		57.0	47.6	K	8.1		56.7	51.2	K	8.6	44	5.5	13.9	K
9.3	23	13.4	57.7	K	9.2		11.0	5.9	K	9.0		58.9	22.5		8.5	23	3.8	19.5	L	9.2		19.4	59.5	
9.4		30.6	33.1		9.3	45	49.9	39.7		9.5	6	27.1	4.8		9.3		16.9	13.9	B	9.3		30.5	6.9	K
9.5	24	0.2	55.7		9.3	47	14.2	12.5	K	8.9		32.2	52.6	K	9.5		28.9	35.5		9.5		43.2	11.1	
8.2		56.1	21.2	K	8.7		37.9	32.5	K	9.5		48.0	3.5		9.4	24	13.2	34.1		9.0		56.9	30.4	K
7.9	25	26.4	9.8	L	8.9		41.4	40.8	K	9.2		56.9	29.0		9.5		28.5	11.2		9.4	45	8.3	46.7	
9.3		28.7	38.8		9.4		50.2	39.2	B	9.0	7	27.5	10.6	K	9.1		37.6	4.6	K	9.5		9.3	2.9	
8.4		37.1	44.7	K	9.1		50.3	2.2	K	9.4		36.1	5.1		5.0		52.3	13.8	K	9.5		12.9	23.0	
7.5		57.2	20.6	K	9.1		58.7	1.0	K	9.5		55.3	47.2		9.0	25	29.1	9.5	B	9.3		13.4	42.1	
9.5	27	46.7	56.8		9.3	49	12 3	50.1		8.6	8	3.3	20.7	K	9.2	26	7.1	24.5		9.1		20.2	16.7	K
9.3	28	20.9	9.9		9.5		31.4	56.4		8.5		13.5	59.2	K	9.5		23.9	13.5		9.2	46	0.5	55.4	
9.3		29.9	40.5		9.5		54.6	14.3		9.0		21.2	27.2	K	7.0		34.4	33.4	K	9.3		6.2	45.7	B
9.4		35.0	28.4		9.5	50	8.3	12.7		8.7		28.7	56.5	K	9.1	27	8.6	51.0	K	8.2		7.9	53.9	L
9.3		37.7	18.5	K	9.4		48.8	32.5		6.8		40.2	13.8	L	9.3		25.8	5.8		7.8		17.7	21.1	L

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ˢ	+26°			17ˢ—18ˢ	+26°			18ˢ	+26°			18ˢ	+26°			18ˢ	+26°	
m		′ ″		m		′ ″		m		′ ″		m		′ ″		m		′ ″	
9.2	46	17.8	28.7	9.5	58	39.5	15.6	9.1	14	58.1	11.9	9.0	24	18.6	16.3	7.7	38	22.7	5.0 K
8.9		27.4	32.8 B	9.5		51.4	56.0	8.3	15	27.4	38.3 L	8.8		36.7	41.2 K	9.5		24.9	16.1
9.2		29.2	6.9	9.4		53.7	35.7 B	9.4		55.7	56.7	9.5		39.1	18.8	9.2		50.1	27.0
9.3		30.8	50.2	9.5	59	5.0	30.8	9.4		56.1	50.9 B	9.5	25	26.3	6.2	7.8		57.7	3.2 K
9.0		38.7	47.9 B	9.4		31.1	32.2	9.5	16	0.8	19.8	9.5	26	5.1	26.9	9.2		59.5	12.3
8.9		42.4	55.5	9.3	0	4.1	17.4	9.5		17.3	3.7	9.3		27.1	23.2	9.4	39	15.8	58.7
9.4		49.5	10.1	9.4		18.8	25.6	9.5		17.9	39.6	9.4		41.0	11.1	9.3		19.6	31.3
9.5		56.8	10.1	9.0		26.3	20.8 K	9.4		25.7	14.3	9.0		56.2	18.8	9.5	40	5.7	38.9
9.5	47	4.4	54.1	9.4		36.1	41.5	8.7		47.6	45.2 K	9.1	27	5.1	23.5	4.9		14.1	30.7 K
9.0		13.0	27.3	9.5		39.1	16.0	8.7		52.1	9.1 K	9.1		17.4	16.9 B	9.5		15.1	32.7
9.1		40.5	18.8	9.4	1	3.8	41.6 B	9.0		52.6	19.9	9.5		50.0	48.8	9.5		24.9	38.2 B
9.0		42.5	6.6 K	9.5		10.8	42.9	9.4		59.9	19.9	9.4	28	9.9	53.2	9.4		28.6	1.3
8.9		49.5	29.8	9.4		20.0	54.3	8.8	17	34.1	21.1 K	9.0		17.0	49.2 K	9.3		43.1	57.1 B
9.5		51.3	35.4	9.5		36.2	34.3	9.2		42.8	17.4	9.1		33.1	49.5 K	8.9		45.9	20.1 B
9.4	48	13.9	43.2	7.4		42.1	23.8 K	9.4		42.9	29.5	9.5		53.6	53.0 B	9.5		54.8	54.9
9.4		27.7	28.7	9.5		47.3	23.8	9.5		55.5	55.9	9.4		55.6	53.1 B	8.8		59.1	33.9
9.5		58.4	16.0	9.4		56.2	42.5	9.5	18	19.8	47.1 B	9.1	29	0.2	6.7 K	9.2	41	0.0	49.5
9.2	49	14.5	7.2 R	5.9		59.0	4.9 K	8.0		24.1	15.5 L	8.9		3.1	53.9 K	9.5		1.2	4.2
9.5		32.0	51.9	9.2	2	4.4	59.8	9.4		40.3	2.8	9.5		8.4	14.8	9.4		26.9	7.8
5.7		35.4	5.4 R	9.0		13.2	49.0 K	9.5		43.7	13.0	9.1		10.2	57.8 K	9.3		29.6	39.9 B
9.5		48.2	54.0	8.0		57.9	57.0 K	9.3		54.1	52.0	9.4		16.9	56.9 B	9.4		45.4	15.0
9.5		49.1	29.0	9.4	3	33.4	35.1 B	9.4		58.4	45.3	9.3		20.0	8.9	9.5	42	59.4	35.9 B
9.3		59.4	7.7	9.5		33.8	43.9	9.3		59.3	15.7 B	9.3		30.2	57.0 B	9.3	43	7.7	29.3 B
8.5	50	4.9	22.2	9.1		43.2	56.0 K	9.5	19	13.5	17.0	9.5		47.6	28.6	9.4		11.4	11.0
9.5		24.4	30.8	9.2	4	10.2	51.1 B	9.1		19.1	40.5	9.5	30	19.1	40.9	9.0		29.2	4.1 K
8.5		29.2	38.7	9.5		48.0	50.9	9.0		22.1	38.7	8.9		35.7	2.3	9.2		38.0	45.9
9.3		31.6	54.1	7.7	5	15.1	38.3 K	7.7		30.3	0.3 K	9.2		47.6	31.5	9.2		52.1	8.6 K
9.5		36.6	0.0	9.5		27.3	57.8	9.5		40.0	49.4	9.3	31	8.4	2.2	6.7	44	4.1	16.1 K
8.8		48.0	39.4	9.5		29.2	46.2	9.2		54.0	18.8	9.5		14.9	29.7	9.4		30.4	51.9 B
9.4	51	2.1	56.8	9.5	6	17.6	31.2	8.7		55.6	33.9	9.2		41.3	26.7	9.5		34.8	6.2
9.2		8.6	58.9 K	9.5	7	19.8	46.9	9.5		56.2	43.8	9.2		52.0	16.8	9.4		36.2	57.1
9.2		31.2	25.0 B	8.8		26.2	27.7	9.5		59.6	53.4	9.0		54.0	45.5 B	9.5	46	0.5	53.1
9.3		31.3	28.5	9.5		29.1	49.2	8.7	20	21.4	45.8 K	8.9	32	29.3	46.7	9.0		9.2	13.8
8.4		34.2	37.3	9.3		34.4	14.5 B	9.5		26.5	17.9	9.1		34.9	16.4	9.5		16.7	3.2
9.2		48.4	16.7 B	7.0		36.6	12.4 K	7.1		29.1	9.0 K	9.4		46.2	51.9	9.0		24.7	3.6 R
9.2		54.4	2.2 K	9.5		40.0	56.8	8.9		38.2	14.4 K	9.0		49.1	58.8	9.0		26.8	28.2
9.3	52	19.1	38.6	9.3		41.1	15.0	6.5		38.5	22.2 K	9.5	33	0.8	47.0	9.5		32.3	47.9
9.5		32.0	58.4	9.1	8	0.1	33.9	9.5		45.0	53.0	9.1		2.2	17.6 K	8.0		34.0	34.1 R
9.4		35.3	53.5	8.1		6.6	43.1 B	6.1		51.1	21.7 K	7.7		44.1	27.8 K	7.9		34.8	21.3 B
9.1	53	3.0	21.4 K	9.5		55.9	48.2	9.3		55.1	22.4 B	8.4		46.7	3.5 L	8.1		46.1	30.9 R
9.5		22.1	41.5	9.5		57.8	4.0	9.5		55.7	55.9	9.1	34	6.5	22.0	9.1	47	0.0	28.9
9.0		34.1	30.1 K	9.5	9	11.3	1.0 B	9.5	21	16.5	46.3	8.7		18.2	58.3 K	9.1		7.1	30.1
9.0	54	40.8	42.2 K	9.5		38.4	31.2	9.4		19.3	48.3	9.4		21.1	48.0	9.5		18.6	42.0
9.1	55	2.6	4.0 K	9.5		46.6	30.7	9.0		23.0	20.1	6.9		29.3	0.1 L	9.5		28.4	22.2
8.2		6.7	33.8 S	9.2		46.7	2.0	9.2		37.1	22.8 K	9.2		44.9	27.3	9.0		42.3	2.3 K
8.4		10.1	17.6 B	9.5	10	5.1	15.8	9.5	22	1.1	6.2 B	9.3	35	4.7	42.1	9.2		50.8	23.7
9.3		31.6	27.3	9.2		15.6	25.9	9.0		12.0	41.3	9.5		5.0	53.2	9.2	48	20.3	1.8 K
9.0		54.2	43.0 B	9.2	11	6.8	47.5	9.1		15.1	35.9 K	9.5		9.9	27.8	9.5		23.5	54.8
9.0	56	5.5	55.4 K	8.5		7.2	43.2 L	8.8		21.1	43.8 K	8.9		13.2	3.2 K	9.3		34.4	36.1
9.5		6.0	33.5	9.1		17.4	10.1	9.5		30.3	6.2	8.7		21.1	15.6 L	9.3	49	3.1	15.9 K
7.3		36.2	22.1 K	9.2		20.9	37.1	8.6		40.6	17.9	9.5		37.4	51.7	9.3		4.6	10.2 B
9.4		39.8	23.7 B	8.8		40.7	1.8	9.3		53.4	24.1	9.4		57.6	7.5	9.1		6.0	54.1
9.4		50.1	20.9	9.5		48.6	56.3	9.4	23	4.2	2.7	9.2	36	7.4	3.5	9.4		6.6	29.6
9.5	57	8.3	55.5	9.5		56.1	26.2	9.3		27.3	18.4 B	9.5		18.2	41.3	8.4		30.4	48.9 K
8.5		10.7	49.6 K	9.0		56.8	36.6	8.9		29.5	7.9	9.1		32.5	9.2	9.0		33.3	12.8
9.5		18.9	54.5	9.5	12	4.2	52.2	9.4		32.0	16.9	9.5		52.0	30.7	9.1	50	27.6	57.9 K
8.3		20.4	3.8	9.5	13	29.2	12.4	8.7		44.0	41.0	9.5	37	2.4	41.8	9.3		32.1	38.6
8.7		29.6	54.5 B	9.5		49.1	58.9	9.3		47.1	48.4	9.3		30.1	13.4	9.0		36.2	23.5 K
9.2		51.9	3.8 K	8.3	14	18.1	26.5 L	8.3	24	4.2	33.6 K	9.4		43.5	5.6	9.5		41.3	44.5
7.0	58	7.7	39.3 K	9.3		22.5	11.9	9.2		12.8	17.9	9.1	38	15.7	14.1	9.2		42.3	1.5 R

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵐ—19ᵐ	+26°			19ᵐ	+26°			19ᵐ	+26°			19ᵐ	+26°			19ᵐ	+26°	
m				m				m				m				m			
9.0	50′ 49.2	24.6	B	9.4	3′ 6.5	6.4		7.2	13′ 17.9	39.8	K	9.5	27′ 19.8	17.1		9.0	35′ 1.2	56.2	K
9.2	51 3.9	44.0		8.5	21.6	42.1	K	9.5	22.0	5.3		9.0	21.3	10.1	B	9.5	15.0	18.6	
9.5	5.4	24.1		9.5	24.3	28.8		9.4	57.5	55.3	B	9.2	22.8	10.9		9.5	24.1	25.8	
9.3	6.5	21.4	B	8.8	28.8	7.5		8.5	14 5.3	46.8	K	9.4	27.4	8.0		9.4	26.5	12.2	K
9.0	15.2	44.5	K	9.5	45.5	31.3		8.8	7.4	34.9		9.5	30.0	6.2		9.0	36 6.8	18.1	K
9.0	19.4	38.6		9.5	4 10.6	38.9		9.3	8.1	12.7	B	9.5	47.5	23.5		8.3	11.2	50.7	K
9.5	41.8	21.1		9.4	36.6	8.4		7.5	12.6	22.6	L	9.5	28 10.8	2.6		8.3	23.6	44.3	K
9.5	47.3	56.9		9.5	38.8	6.2		7.5	13.6	23.6	L	9.3	22.0	46.5		9.4	31.0	10.4	
9.3	52 39.6	4.5		9.5	56.6	38.4		9.1	18.5	58.6	K	9.5	28.6	20.1		8.4	36.6	55.2	L
9.3	54.4	33.2		9.3	5 25.7	55.7		8.9	28.6	14.9		9.4	30.7	1.6		7.8	37 9.7	35.7	K
9.5	55.0	9.0		9.4	28.4	51.0	R	9.5	15 10.7	0.1		9.0	33.7	5.4		9.2	18.1	40.6	K
9.4	53 6.2	17.2		8.1	31.0	9.6	B	9.5	15.1	22.1		9.4	35.2	41.2	B	9.5	23.8	5.4	
9.5	11.7	11.1		8.5	31.6	35.9	K	7.7	45.6	21.8	R	9.5	59.6	33.4		9.5	34.8	58.3	
9.0	24.0	10.1	B	7.4	37.6	30.0	L	8.0	16 39.6	53.2	K	6.9	29 3.9	54.4	L	6.8	59.9	47.5	K
9.5	26.6	6.6		9.0	42.3	8.8		9.4	48.6	12.9		9.5	8.2	4.6		9.5	38 11.8	25.2	
9.5	28.4	33.3		7.7	42.6	2.4	K	9.4	17 17.6	50.7	K	9.4	8.8	8.6		9.2	24.7	39.6	
9.1	29.9	23.4		7.5	50.0	0.6	K	9.1	18 0.8	1.4		9.5	10.7	1.8		9.4	45.8	50.8	
5.8	50.7	1.6	L	9.1	6 9.7	2.8	K	9.3	20.3	29.0		9.5	36.4	41.3		9.0	55.6	52.5	K
9.3	54 0.7	11.7		8.9	17.8	11.2		8.8	24.6	55.7	K	8.0	38.0	47.5	K	9.3	39 16.2	32.8	
8.5	5.8	9.1	L	9.5	20.6	36.6		8.8	26.7	4.2	K	9.4	48.6	18.4		9.3	48.8	43.3	K
7.5	8.4	45.9	L	9.4	24.2	52.2		9.5	27 1	10.2		8.5	30 3.4	10.2	K	9.4	50.1	50.2	
9.2	17.5	36.0		9.4	35.8	15.2		9.5	31.5	31.7		9.0	7.2	23.5		8.9	51.9	16.9	K
9.3	25.3	0.5	K	9.3	43.6	11.2		9.1	36.5	4.8	K	8.4	11.7	54.9	K	9.3	40 2.4	13.4	
8.7	57.9	53.7	L	9.5	51.3	4.5		8.9	47.4	39.8		9.2	15.8	8.6		9.4	3.5	50.7	
8.2	55 4.1	25.2	L	8.3	7 3.6	24.0		9.0	48.2	53.4	K	9.2	21.4	21.7	B	9.1	39.0	48.2	K
8.5	4.1	15.7	L	9.5	9.4	31.7		9.0	19 0.3	12.6		9.0	22.5	38.4		9.5	39.0	50.7	
9.3	20.6	26.0		9.5	11.5	56.2		9.0	6.8	24.0		9.3	22.9	47.8		9.4	41.5	10.3	B
8.8	23.7	30.0		9.1	25.1	9.7	K	9.2	16.6	8.5	K	8.5	26.2	21.0	B	9.4	53.7	30.0	
6.2	23.7	5.2	K	9.5	27.4	28.0		8.2	31.7	3.3	K	9.5	28.1	26.6		9.0	58.8	21.1	
8.5	31.4	11.5	K	9.0	55.3	12.7	K	9.2	42.5	48.5	B	9.4	39.0	11.5		9.3	41 0.8	32.1	B
9.4	32.4	34.7		9.1	8 18.0	11.4		9.5	20 10.4	39.6		9.5	53.2	22.6		9.2	42 4.4	32.9	K
9.5	56 35.6	49.0		8.6	21.5	46.2		9.2	23.6	43.6	K	9.5	31 3.3	0.5		9.5	13.5	59.8	
9.4	37.6	27.5	R	9.5	26.8	2.1		9.2	35.5	16.2		9.5	8.0	51.2		9.4	19.3	1.6	
9.3	57 29.4	11.7		9.5	35.7	6.4		8.5	40.7	1.7	R	9.0	19.2	5.0		9.2	27.2	55.6	K
9.4	36.3	1.8		9.4	39.2	28.4		9.5	21 4.5	44.2		7.5	23.4	2.0	L	9.4	35.2	33.2	
9.5	51.8	4.0		8.2	53.0	28.6	K	9.5	24.7	7.2		9.4	48.2	53.7	K	9.4	50.7	13.9	
8.8	58.5	28.7		9.5	56.9	53.3		9.5	43.6	40.3		9.3	59.7	24.8		9.3	43 48.0	32.5	
9.3	58 44.9	5.8		8.9	9 27.2	7.5		9.3	47.4	5.8		9.3	32 0.0	37.9		7.0	57.5	43.3	K
8.8	49.0	7.2	K	9.4	34.6	27.5		8.5	50.6	49.7	K	9.4	0.8	7.5		8.1	44 2.9	48.2	K
9.5	57.2	20.1		9.3	36.0	46.8		9.3	22 11.2	19.5	B	9.2	3.2	45.8		9.4	9.4	11.8	
9.0	59 0.6	8.7	K	9.5	37.5	4.1		9.2	26.6	45.8		9.3	8.9	23.3	B	9.4	20.2	47.0	
9.2	14.7	48.5	K	9.5	10 5.4	23.9		9.0	27.5	18.9	R	9.4	14.5	24.3		9.2	25.2	5.4	B
9.5	21.8	54.3		9.2	12.0	13.7		9.4	45.1	40.2	B	9.4	18.8	23.8		9.5	26.6	43.2	
9.4	23.3	0.8		7.5	15.6	36.4	L	9.5	55.2	8.3		9.3	25.6	11.4		8.5	27.8	20.1	K
9.5	36.5	46.0		9.5	36.7	5.1		9.2	23 8.8	5.9		9.2	47.6	35.2		9.5	34.6	36.1	
9.0	0 1.9	7.0		8.9	39.8	13.9		8.0	19.2	25.2	B	9.3	33 1.6	54.5		9.2	44.6	26.0	K
9.0	4.4	42.7	K	8.7	50.7	53.9		8.5	23.7	2.2		9.5	6.7	6.0		9.4	45 2.2	46.0	
9.5	31.4	0.5		9.5	53.3	12.5		9.3	25.3	13.6		8.9	36.8	25.5		8.5	3.0	26.8	K
9.3	37.8	14.7		8.3	11 8.0	33.4	K	9.5	24 7.8	30.1	B	9.4	38.3	55.9		8.9	15.1	12.3	K
9.4	41.6	35.5	B	9.5	13.9	2.1		8.6	38.8	56.3	K	9.5	40.6	26.5		9.5	15.3	43.0	
9.1	46.1	32.8	B	9.0	37.1	22.0	K	9.2	25 12.0	2.2		8.9	34 7.6	52.2		9.1	19.4	13.1	B
8.3	1 5.6	13.9		9.5	50.6	37.9		9.3	22.9	49.2		7.0	17.4	39.7	L	9.4	42.9	55.2	B
8.5	16.0	29.1	R	8.7	51.1	54.9	K	6.5	24.9	18.6	K	9.5	22.2	50.0		9.3	43.3	20.8	
9.5	19.9	53.1		9.4	57.8	7.6		7.7	41.8	40.8	L	9.5	30.0	7.5		8.6	52.7	1.6	K
9.4	29.6	12.7		9.5	12 17.9	2.9		9.5	50.1	11.2		9.5	32.1	14.9		9.2	54.8	6.9	
9.5	31.2	34.2		9.5	28.5	48.2		9.4	55.0	34.2		9.1	36.6	41.5	B	9.2	46 14.2	8.5	
9.4	2 14.0	21.3		9.3	34.7	6.1		9.5	26 28.1	31.6		9.4	38.7	42.1		9.2	14.4	2.9	
8.0	25.7	51.9	K	9.5	43.4	26.7		9.0	34.4	5.5		9.5	43.0	27.0		8.9	17.4	44.9	B
9.5	42.1	8.4		9.5	45.0	13.6		9 2	55.2	3.0		9.2	49.3	0.0		9.0	20.3	21.1	
8.9	44.3	57.9		9.5	58.8	48.6		9.0	27 7.4	1.8		8.1	55.7	47.7	K	9.2	21.6	46.7	

3701—3760				37..—3820				3821—3880				3881—3940				3941—4000			
	19ᵘ	+26°			19ᵘ—20ᵘ	+26°			20ᵘ	+26°			20ᵘ	+26°			20ᵘ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	46 22.6	13.5	K	9.1	54 53.1	13.7		9.5	5 17.5	32.7		9.5	16 40.6	27.5		8.0	31 54.6	34.5	B
9.1	28.0	11.0	K	8.8	55 12.6	30.3		9.4	22.3	0.1		9.0	43.4	43.8		9.5	32 7.7	55.8	
9.2	30.2	30.8		7.5	15.3	47.4	L	9.4	26.1	7.3		9.0	44.1	41.4	B	8.7	45.5	11.5	
8.0	47 2.6	53.0	K	8.6	43.9	52.5	K	9.5	38.5	9.2		8.5	46.4	40.1	B	9.5	33 10.1	47.8	
9.1	9.1	4.2		9.0	49.5	51.0	K	5.8	44.3	23.0	L	9.5	52.5	54.9		9.4	16.2	44.3	
8.5	12.5	13.2	K	9.2	54.3	40.9	K	6.5	46.2	27.8	L	9.5	17 6.7	47.5		8.9	18.1	7.0	
9.2	13.0	25.9	B	9.2	56 35.8	21.9		7.2	53.9	18.9	K	9.5	39.8	41.6		7.5	20.4	11.2	B
7.7	17.7	7.5	K	9.0	57 0.5	11.7	K	6.2	55.9	3.0	K	9.2	18 29.4	25.0		9.5	24.2	24.0	
9.2	19.5	58.0		7.7	4.6	28.8	K	9.3	6 31.6	1.7		9.5	33.0	34.2		9.5	24.6	28.7	
9.0	42.4	24.9		9.5	41.2	45.6		9.4	31.9	7.1		9.4	33.2	52.4	B	9.5	28.0	13.6	
8.0	46.6	37.7	K	8.7	57.8	22.3	K	7.9	57.1	50.7	K	8.5	37.7	38.8		9.1	35.1	48.8	
7.3	52.0	13.2	K	9.4	58 0.2	45.0	R	9.5	59.0	57.1		9.0	19 2.3	40.9		8.8	52.2	45.6	
9.4	57.1	35.2		9.5	22.0	35.7		9.3	7 27.2	45.7		9.4	4.1	56.0		8.1	59.3	33.8	B
9.1	48 5.6	33.7		9.5	27.5	57.6		9.4	38.8	42.7		9.2	13.5	58.9	B	9.5	34 16.0	2.3	
9.1	5.8	3.7		9.0	33.6	28.5	K	8.7	42.9	18.9		9.4	18.3	56.9		8.6	20.4	18.2	
9.5	30.4	26.0		9.5	37.4	39.1		9.0	44.6	28.0		9.0	29.1	54.4		9.2	28.6	48.8	
8.4	41.4	56.9	K	9.5	39.2	45.2		9.1	8 24.4	35.9		8.2	31.0	14.1		9.3	59.0	14.0	
9.5	45.3	5.2		9.2	40.1	10.7		8.4	42.6	49.2	K	9.2	36.5	13.9		9.1	59.0	32.0	
9.3	49.9	14.9		8.7	43.5	32.4	K	9.4	42.6	29.2		9.5	42.2	26.0		9.5	35 13.7	48.3	
8.5	58.6	35.9	K	8.4	45.2	4.2		8.8	43.8	21.0	K	9.4	54.4	2.1		9.3	36.3	55.4	B
8.8	49 5.5	22.5	K	9.4	59 6.3	42.1	B	9.5	9 10.3	17.0	B	9.5	58.9	17.2		8.4	36.5	35.5	K
9.2	6.5	37.8		9.5	6.5	43.1		9.5	33.1	8.7		9.0	20 21.3	22.6		9.4	47.0	53.0	
8.7	10.8	12.1	K	8.0	11.4	36.9	K	9.0	36.9	18.3	K	9.1	44.0	53.5		9.5	49.6	52.6	
9.5	18.1	44.0		9.5	16.7	22.6		9.5	46.8	56.2		9.5	21 21.3	22.6		9.5	36 48.5	2.1	
8.4	25.2	19.8	K	9.4	27.1	51.5		9.5	49.7	45.8		8.7	22 4.4	55.7	K	9.5	51.7	55.3	
9.4	33.9	1.2		8.9	27.9	32.7	K	9.1	56.9	35.9		9.3	20.9	59.1	B	9.4	52.2	56.1	
9.5	37.7	17.7		9.5	41.6	50.1		9.2	10 8.2	47.5		9.5	43.0	47.4		9.4	54.6	28.2	
9.5	38.4	31.0		9.5	0 8.0	57.9		9.1	12.9	15.9		9.2	55.1	29.0		9.0	37 3.7	24.1	K
9.3	49.2	22.5		9.5	19.1	50.7		7.5	16.4	2.6	K	9.5	23 7.7	24.3		7.8	13.3	43.8	K
9.5	50.6	35.1		9.5	27.7	6.8		7.9	47.8	36.5	B	9.5	9.3	2.4		8.5	46.2	55.8	
9.5	50 10.3	5.3		9.5	40.7	47.0		9.5	11 11.7	24.5		8.8	18.4	35.7		9.5	38 8.3	22.1	
9.3	14.4	43.3		9.2	41.7	25.3		8.5	14.2	6.2		8.2	20.7	27.3	K	9.4	16.1	1.9	
9.3	20.0	3.2		9.5	1 3.1	10.7		9.5	27.3	42.3		9.5	22.0	57.1		9.0	23.9	58.6	K
9.5	32.4	0.5		9.4	9.0	5.9	B	9.4	33.4	22.0		9.3	29.1	8.3		9.5	31.5	31.6	
9.4	38.0	0.8	B	9.5	11.5	32.9		9.4	47.4	16.6		9.5	24 3.3	21.6		9.0	39.3	1.8	
9.5	44.9	34.9		9.5	17.0	57.7		9.1	12 5.6	28.2	K	9.5	39.1	28.3		9.5	42.3	7.8	
9.4	51.5	54.6	B	9.4	19.7	3.3		9.5	19.1	28.0		7.7	48.0	12.2	K	9.4	39 8.7	25.7	
9.5	57.9	58.6		9.5	19.8	7.9		9.5	24.5	34.9		9.5	55.1	9.0		9.4	15.0	17.7	B
8.9	51 2.8	10.7		8.8	43.8	20.6	K	7.0	45.5	32.2	K	9.4	25 30.8	16.5		9.0	22.0	34.6	
9.2	25.1	45.7	B	9.5	55.6	30.0		9.3	50.7	4.8		9.4	41.8	20.1	B	9.4	52.2	6.8	
9.1	26.4	10.0		9.0	2 2.9	37.4		9.3	13 9.7	4.7	B	8.2	44.5	33.0	K	9.3	57.4	16.9	
9.5	28.8	1.9		9.3	16.9	41.4	B	9.4	21.1	8.3		8.5	54.5	34.9	K	9.1	40 0.4	50.9	B
9.4	32.2	45.6	B	8.0	18.2	46.8	K	9.5	25.2	25.6	B	9.5	26 6.0	15.3		9.5	35.5	0.5	
8.0	55.6	51.9	B	9.0	26.8	41.4	K	8.2	31.9	58.2	K	9.4	16.5	33.5		9.2	36.1	29.7	
8.3	52 0.3	50.5		9.3	43.2	3.1		9.5	48.1	4.3		9.5	19.5	54.3		9.4	40.6	28.7	
9.2	14.8	19.2	K	9.4	48.7	54.8		9.0	54.1	29.3	K	9.4	23.8	41.4	R	8.9	47.0	34.6	K
9.1	15.9	3.5		9.5	52.7	25.1		9.2	58.2	48.1		9.5	36.7	5.8		9.3	52.2	46.9	
9.2	26.9	38.4	K	8.7	3 5.7	47.6	K	9.5	14 8.2	46.9		7.1	44.3	43.1	K	9.5	41 0.8	59.1	
9.5	27.7	6.7		9.2	8.2	45.9		9.2	14.4	37.0		9.2	50.1	1.2		9.5	2.7	26.8	
9.5	49.6	28.8		9.5	17.6	29.1		9.5	18.3	24.2		8.7	27 11.2	58.0	K	9.5	11.2	27.0	
8.6	53 14.8	1.9	K	8.1	46.0	54.3	K	8.3	22.9	16.9	K	9.4	14.8	29.8	B	9.5	17.0	32.1	
9.5	17.6	3.8		9.5	52.3	19.4		9.5	26.2	2.8		9.5	55.2	2.8		9.5	22.2	34.1	B
9.0	23.0	11.8		9.3	56.6	10.5		9.5	43.3	23.1		9.5	28 34.8	22.3		9.0	23.3	42.8	K
9.5	26.0	20.8		9.0	4 13.1	8.5		8.4	56.4	57.3	K	9.5	29 1.2	2.0		9.5	54.0	6.8	
9.4	39.4	5.4		5.7	29.6	28.3	L	8.8	15 33.0	11.2	K	8.8	41.3	43.6		8.0	55.1	55.2	L
9.2	52.3	42.1		8.2	53.0	53.5		9.5	40.0	13.7		9.1	43.0	14.5		8.8	42 7.2	46.6	
8.9	54 21.4	16.7	R	9.5	5 2.4	41.8	B	9.5	16 0.4	37.2		8.1	30 21.8	6.2	B	8.8	11.0	52.5	
8.2	33.3	44.9		9.5	9.5	56.4		9.5	2.0	33.0		8.4	47.5	34.4	B	8.8	12.6	17.1	K
9.5	36.8	10.3		9.4	13.7	5.5		9.5	3.1	18.2		9.5	58.0	14.1		9.5	27.4	57.8	
9.0	39.5	10.8		9.5	16.3	39.3		9.3	15.1	50.2		9.5	31 41.7	3.3		9.4	42.7	5.3	

4001—4060				4061—4120				4121—4180				4181—4240				4241—4300			
	20ʰ	+26°			20ʰ—21ʰ	+26°			21ʰ	+26°			21ʰ	+26°			21ʰ	+26°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
8.7	42	48.3	42.6	K	9.5	56	56.3	1.8	9.1	11	18.6	40.2	9.3	24	9.9	50.1	9.5	35	32.1	26.9
9.4	43	1.2	0.9		7.0	57	4.2	45.7	B	9.5		33.5	46.7	8.8		18.3	50.6	8.8		46.4	10.1
9.2		18.1	55.6		9.4		12.3	59.7		9.5		45.0	59.8	9.2		27.0	11.9	8.8	36	12.0	27.5
9.5		25.2	17.5		8.5		25.0	14.9	R	9.5		47.0	3.2	9.4		29.8	25.4	B	9.4		14.5	4.9
8.0		26.0	22.1	K	9.4	58	14.6	59.2		9.5		54.6	26.3	9.4		31.6	23.4		9.5		21.1	46.9
9.4		42.4	39.4		8.0		53.0	11.0	L	9.5		57.2	15.5	9.4		43.1	27.4		9.5		22.0	57.5
9.5		43 6	30.5		9.0		53.2	4.8		9.5	12	20.5	14.3	9.5	25	15.6	40.0		9.5		47.8	7.9
7.5		54.1	50.3	K	9.4	59	2.0	13.7		9.5	13	17.5	21.2	B	9.5		24.2	53.4		9.5		48.3	51.0
8.9	44	6.8	3.7	R	9.5		2.2	26.0		9.5		19.5	23.7		8.8		52.0	42.0	L	8.8	37	2.1	40.6
8.8		11.0	4.3	K	8.5		8.8	42.6		8.1		27.3	53.2	L	9.5		51.8	48.3		9.4		24.6	1.3
9.5		19.6	0.9		9.5		31.8	59.1		9.0		35.8	13.4	B	8.8	26	4.2	41.7		9.3		29.5	45.3
8.9		55.0	2.0	K	9.5	0	5.1	37.6		9.5		55.3	18.6		9.5		14.1	35.3		9.5		33.2	10.0
7.7	45	13.6	53.3	B	6.3		5.8	21.1	K	9.0	14	34.6	41.9		9.5		26.5	37.8	B	8.3		45.0	24.0
9.0		31.2	3.6		9.4		11.2	20.5		9.5		52.6	31.3		8.6		34.0	41.7	K	9.5	38	12.1	47.3
9.2		42.9	37.2		9.3		24.1	49.5		9.2	15	10.3	23.8		9.2		44.4	30.6	B	9.0		35.5	5.4
9.4		54.8	23.3		9.5		50.3	55.3		9.5		33.3	50.2		9.5		56.6	11.7		8.3		48.3	41.9	K
5.0		56.5	32.9	K	9.5		53.8	4.6		9.5		59.8	21.2		8.1	27	10.2	57.5	K	7.5		50.4	19.4	K
9.4	46	9.7	1.8		9.4	1	25.3	5.0		9.3	16	6.2	2.9		9.4		34.4	31.4		9.4		59.0	51.4	
9.1		34.7	25.5		8.9	2	20.9	42.5	K	9.5		21.6	37.6		9.5		57.1	20.5		9.5	39	6.6	28.5	
9.5		46.4	9.8		9.5		23.8	59.4		9.4		29.1	57.4		9.5	28	9.6	10.4		9.1		11.7	21.6	
9.2	47	4.9	35.9		9.5		23.8	40.1		9.5		31.6	36.3		9.3		21.6	50.2		9.5		29.1	55 5	
9.5		11.3	41.8		9.5		26.5	24.8	R	9.2		38.3	49.0	B	9.5		32.0	19.2		9.2		39.6	23.7	
9.2		22.9	38.1		9.5		31.1	16.5		9.5		43.8	47.4		9.5		35.0	27.9		9.5		46.4	29.6	
9.5	48	18.6	29.5		9.5		36.6	38.0		9.3		44.6	6.7	B	9.3		43.7	22.0		8.9		59.5	39.7	
9.2		48.7	47.8		9.3		36.8	10.7		8.8	17	15.2	32.2		9.0		46.3	31.9		8.2	40	0.6	5.3	
9.5		57.0	31.7		9.5		39.8	3.3	B	8.9		59.0	1.3		9.3		59.9	48.0		8.4		17.8	33.9	K
9.4	49	15.7	19.6	B	7.8		44.1	24.8	K	9.4	18	15.9	32.1		9.5	29	15.5	9.8		8.8		17.8	38.0	
9.0		18.5	13.7	R	9.0		50.6	12.5	B	9.4		16.2	54.0		9.0		19.0	49.4		8.6		27.1	58.7	K
8.8		21.5	34.2		9.4	3	12.1	24.6		8.5		24.1	0.1	K	9.5		23.8	59.5		9.4		56.3	10.0	
9.5		35.2	12.1		9.5		31.7	46.3		9.0		29.6	28.8		9.0		38.3	36.8		9.5	41	10.5	5.4	
8.7		35.7	27.0		8.0		40.8	1.8	K	7.0		37.3	47.3	L	9.1		39.6	57.0		9.5		38.5	55.7	
9.5	50	1.2	0.6		7.8		58.7	42.2	K	9.5		40.6	29.5		9.5		58.1	40.8		9.5		43.7	13.7	
8.0		10.0	57.0	K	9.4	4	5.9	42.5		8.7		44.4	31.3	B	9.0	30	10.2	3.6	K	9.5	42	18.5	4.8	
9.2		13.9	37.9		9.2		19.5	17.7	B	8.8		59.5	13.3		9.3		22.4	37.0		9.0		20.4	59.9	
9.5		28.4	39.1		9.3		26.6	21.4		8.5	19	0.0	32.7	K	8.6		33.3	43.3	L	9.5		44.1	28.6	
9.5		28.5	13.7		9.2		36.1	37.7		8.3		6.1	35.3	K	9.5		41.4	2.1		9.5	43	9.6	49.0	
9.3		54.8	23.3		7.5	5	9.0	57.6	K	9.5		20.3	58.0		9.2		51.6	26.4		9.5		20.7	34.3	
9.5	51	22.6	37.4		9.5		15.5	47.3		9.5		43.1	31.1		9.2	31	2.7	57.4		9.5		35.8	22.6	
9.4		26.1	25.3	B	9.5		17.3	57.5		9.0		46.7	21.6		9.3		11.6	37.3	B	9.5		54.9	57.4	
9.4		26.2	23.3		8.1		58.9	55.1	K	9.3		49.9	16.4		9.5		19.2	42.7		9.5		58.8	49.6	
9.4		27.8	33.6	B	9.3	6	49.1	12.7	B	9.5	20	0.0	33.6		8.7		27.2	33.3	K	9.5	44	10.6	31.5	
9.5		36.5	11.2		9.4		50.8	10.7		9.5		11.0	24.8		9.3		58.0	29.1		9.5		57.9	17.5	
9.5		53.2	5.8		9.5		54.3	45.0		8.8		32.9	43.5	K	9.4	32	2.5	54.1		8.0	45	2.0	2.6	K
9.5		59.4	53.8		9.3	7	0.4	48.6		5.4	21	17.0	58.9	K	9.5		8.8	45.4		9.5		27.9	58.1	
8.8	52	2.3	20.6	K	9.5		4.8	23.5		9.5		22.6	20.5		9.1		11.9	40.9	B	9.2		43.6	15.8	
9.5		13.9	57.8	B	9.4		9.5	13.5		9.1		25.9	8.5	K	9.5		29.6	59.0		8.5		53.5	4.2	K
9.4	54	9.8	22.0		8.9		36.8	32.9		9.1		29.4	39.3		9.4		59.8	36.6	B	9.3	46	10.4	27.0	
8.8		23.5	33.9	K	9.5		41.3	25.6		9.1		30.1	46.5		9.5	33	10.4	33.3		8.9		16.9	31.2	
9.4		36.1	49.2		9.5		47.4	46.6		8.6		38.2	45.3		9.3		21.3	2.1		8.9		22.7	51.6	
8.3	55	12.6	10.0		9.3	8	14.6	25.3	R	8.6		45.7	56.8	K	9.0		36.3	19.7		9.4		37.2	52.8	
8.8		31.3	40.6	K	9.5		27.0	11.3		9.2		48.2	5.2		9.3		39.5	55.4		9.4		37.6	15.3	
8.9		39.1	19.2	B	9.5		44.6	11.1		9.5	22	11.1	25.2		8.6		40.1	26.2	K	9.0		43.9	39.0	
8.8		39.5	33.4	K	9.4	9	8.5	59.3		9.5		12.9	19.7		9.3		49.2	44.8		9.4	47	4.7	47.4	
9.0		50.1	50.7		9.3		30.1	25.6		9.5		45.2	46.3		9.5	34	1.6	38.1		9.4		6.5	20.8	
9.5	56	2.8	59.1		9.5		50.7	56.7		9.4		46.4	8.2		9.5		18.0	49.2		9.4		10.6	9.0	
9.5		16.9	8.9		9.3	10	1.0	18.7	B	9.5		58.8	24.0		9.4		27.1	43.4		9.3		48.0	47.9	
9.5		22.1	48.0		9.1		7.8	34.7		9.4	23	23.7	55.0		7.1		33.1	5.8	K	9.3	48	13.1	11.0	
9.4		27.6	26.3		8.4		32.0	39.0	K	9.5		37.3	38.9		9.5		44.6	19.2		9.4		20.9	41.9	
9.3		28.7	10.3	B	9.5		51.8	24.9		9.5		40.8	43.6		9.5		53.7	31.3	B	9.3		26.8	58.4	
9.0		29.4	18.9		9.4	11	5.6	50.8		9.1	24	2.7	1.2		9.5	35	18.4	0.3		9.0		33.3	7.3	

+26° 23ᵃ

4601—4630				4631—4660				4661—4690				4691—4720				4721—4746			
	23ᵃ	+26°			23ᵃ	+26°			23ᵃ	+26°			23ᵃ	+26°			23ᵃ	+26°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	11 40.1	2.9		9.4	19 42.7	45.8		9.3	28 55.1	59.5		7.8	40 54.1	54.9	K	8.1	51 53.8	27.9	K
9.3	48.1	1.3		9.3	44.9	23.0		9.4	29 31.7	0.7		8.5	41 10.6	20.0		8.7	52 25.8	8.2	L
9.5	12 19.0	18.6		9.5	20 22.2	23.8		8.8	38.9	6.4	B	9.4	22.2	56.8		9.5	34.3	23.9	
8.0	30.5	42.7	K	9.5	21 19.6	58.9	B	9.5	30 27.6	14.5		8.7	57.3	52.5	K	9.5	57.1	32.8	
9.5	54.6	23.4		9.0	25.5	25.6		9.5	32.5	45.4		7.4	42 0.7	13.6	B	9.4	58.5	37.3	B
9.2	13 38.6	57.8	B	8.8	30.8	26.6	B	9.5	50.4	14.1		9.5	10.4	35.2		9.5	53 0.5	37.8	
9.5	40.0	36.2		9.5	48.7	2.2		9.0	54.2	46.9		9.4	22.5	31.7	B	6.5	1.0	7.3	K
9.0	44.6	53.9	R	9.1	22 13.5	52.6		8.5	31 23.3	41.3	K	7.1	31.6	52.8	K	9.5	23.2	44.5	
9.4	47.8	23.9		9.5	18.0	27.1		9.5	40.0	4.2	B	9.3	37.4	53.3		9.5	25.3	49.0	
9.5	54.4	8.3		9.5	45.8	1.1		9.1	32 34.9	18.5		9.2	59.7	47.6		9.1	28.9	36.6	
9.5	55.3	26.9		9.4	23 33.1	7.9		6.3	45.4	43.5	K	9.5	43 16.1	52.2		9.5	49.3	47.2	
9.2	56.0	52.5	R	8.9	44.6	59.0		8.5	45.5	13.1	B	9.3	27.3	50.4	B	9.5	54 19.5	2.5	
9.3	59.2	45.8		9.3	47.7	55.3		7.5	47.7	1.5	K	9.5	48.2	22.4		9.5	21.8	51.0	
9.1	14 31.4	58.4	K	9.5	24 27.2	25.1		9.4	33 14.4	50.7		9.5	55.2	9.1		6.1	36.3	18.8	K
9.5	39.3	27.3		9.5	50.4	10.0		9.4	22.1	4.8		9.5	59.7	2.9		9.0	38.3	18.7	B
9.2	41.5	5.2		9.4	25 32.5	47.5		9.5	35 21.5	30.5		9.3	44 2.3	33.9	B	9.5	47.0	24.2	
8.5	15 41.4	46.8	K	9.5	35.8	19.4		9.4	23.8	41.5		8.2	8.5	31.3	K	9.5	55 59.3	53.8	
9.5	16 51.2	9.7		9.4	44.1	15.4	B	9.0	36 35.4	54.4	B	9.5	46 32.3	58.5		9.3	56 20.8	42.8	
9.5	52.8	46.9		9.5	26 11.3	25.3		8.4	37 0.0	46.4	K	9.5	48 10.4	9.4		8.9	45.5	12.2	B
9.5	17 36.5	38.5		9.5	16.3	50.5		9.3	6.5	14.8		9.5	26.5	37.7		9.0	48.4	53.4	B
9.1	37.7	23.4		9.5	32.8	41.6		9.5	15.0	12.7		9.5	27.8	22.1		9.1	51.4	9.4	
8.7	52.6	7.5		9.3	27 19.2	15.5		9.5	38 52.8	53.9		9.5	49 13.9	29.4		9.5	57 1.0	47.1	
9.5	55.0	9.0		9.4	50.1	16.0	B	9.5	39 22.5	48.9		8.8	38.2	1.3		9.3	25.8	22.0	B
9.5	57.8	30.0		9.5	50.5	52.6		9.3	35.8	29.4		7.2	39.3	46.2	K	6.8	34.0	52.0	B
8.8	59.1	18.5		9.3	53.2	43.7		8.4	41.5	24.1	K	9.0	41.2	57.9		9.5	58 7.5	47.7	
9.3	18 39.7	58.4	B	9.5	28 5.1	9.0		9.5	40 11.2	51.6		9.0	51.9	35.9		9.1	59 2.8	15.2	
8.6	49.7	53.4	K	9.3	28.5	21.0		8.5	19.4	22.1	K	8.7	56.7	55.8	K				
7.6	50.6	54.6	K	9.3	31.9	38.3		9.4	19.9	17.2		9.3	50 7.3	6.8					
9.5	19 25.2	2.6		9.5	40.5	27.2		9.4	25.2	48.8	B	9.3	11.2	3.4					
9.5	32.9	13.2	B	9.0	54.1	53.1	B	9.5	29.8	8.2		9.3	51 29.9	51.0					

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+27°		1ᵘ		+27°		1ᵘ—2ᵘ		+27°		2ᵘ		+27°		2ᵘ—3ᵘ		+27°	
m	′	″	′		′	″	′		′	″	′	m	′	″	′	m	′	″	′	
9.5	6	58.1	31.3		7.2	31	7.2	1.4	K	9.5	54	16.2	58.8	9.5	18	58.5	47.4	9.0	39	48.2	47.7	
8.8	8	12.7	48.6	K	7.8		24.1	22.5	K	8.9		21.4	24.7	9.4	19	29.4	34.2	9.3		51.0	27.0	
9.0		45.0	30.0		9.5		50.6	10.6		9.3		41.4	11.4	9.1		40.5	12.8	9.4	40	47.7	57.2	B
9.3		49.0	12.2	B	8.6		53.7	34.9	L	9.3		57.0	0.8	8.5		47.5	40.8	9.5		48.5	50.7	B
8.8		53.6	4.4		9.5	32	9.2	16.5		9.5	55	40.6	55.0	B	9.0	20	32.4	4.6	9.4	41	25.4	0.5	
8.0	9	4.9	13.8	K	8.3		9.5	52.0	K	8.5	56	1.3	52.9	K	9.4		40.2	39.4	9.5		53.6	25.2	
8.5		58.3	10.3	K	9.5		29.2	36.9		9.0		22.3	48.2	K	9.5		44.0	51.8	9.4	43	6.0	50.6	B
9.3	10	17.4	26.5		9.5		47.2	9.4		9.5		40.4	33.0		9.0	21	8.0	22.9	K	8.4	44	18.4	29.1	
9.1		30.9	54.7		9.0		53.7	14.9		9.0	57	37.3	24.3	B	9.2		29.4	11.0	B	9.5		26.2	6.1	
9.5		52.0	7.2		8.7	33	3.7	44.5	K	8.8	58	19.1	7.8	K	9.4	22	7.6	50.8		9.5	45	29.2	5.1	
9.3	11	16.8	9.3		8.6		40.8	23.8		9.5		19.2	37.2		8.5		12.2	9.1	B	9.3		46.5	16.3	
9.2		31.0	12.3	B	9.3	34	20.1	15.6		9.5		43.2	55.4		9.5	23	44.7	2.5		9.3		50.2	57.7	
9.5	12	2.4	34.5		9.5	35	2.7	6.7		9.1		49.1	34.3		8.6		46.2	33.7	K	9.2		59.2	43.8	B
9.5		7.1	53.4		9.1		8.2	20.4	K	9.5	59	56.3	33.2		7.9		50.8	56.3	K	9.3	46	38.9	5.2	
5.0	13	6.4	58.6	K	9.5		21.0	41.5		9.0	0	4.6	37.3		9.1	24	44.0	25.2		7.2		48.0	8.1	K
9.0		22.8	34.9		9.5	36	7.5	50.7		9.0		49.6	8.1	K	9.5	25	10.5	17.4		8.3		51.4	33.5	L
9.3		24.1	53.1		7.5		42.6	44.1	K	8.0	1	0.5	42.7	K	9.2		15.4	34.6		8.0	47	19.4	39.6	L
9.5	14	30.3	13.8		9.1	37	1.1	30.2		9.5	2	16.3	10.6		9.5		20.4	42.8		9.5	48	15.5	2.2	
9.5		48.6	21.9		9.0		23.6	33.5	B	9.3		18.1	33.1	K	9.3		40.0	5.0		9.5	49	29.9	26.2	
9.5		51.7	36.0		9.1	38	0.9	16.3		9.4		56.3	52.9	B	9.5		48.5	13.6		9.5		46.3	33.4	
9.5	16	7.1	15.0		9.5		43.8	53.1		9.0	3	32.8	38.1	B	8.6	26	17.4	45.3	K	9.5	50	5.5	3.3	
9.5		41.8	4.2		8.2	39	31.6	45.2	S	9.5		53.0	33.4		9.1		17.5	16.1		9.5	51	9.0	58.3	B
8.7		53.6	42.7	L	9.1		37.2	20.4	K	9.2	4	39.2	22.0	K	9.5		33.5	31.8		9.3		23.7	26.5	K
9.5		55.2	33.0		9.0		47.7	11.1	K	9.0	5	14.0	15.2	K	9.3	27	35.1	5.8		9.2	52	1.0	44.7	K
7.7	17	8.4	48.2	L	9.3		51.8	8.4		9.5		49.1	1.3		8.3		47.6	55.6	B	9.4		28.8	39.2	
9.4		13.5	0.4		9.0	40	58.2	31.8		9.0		50.3	43.0	B	9.5	28	15.9	35.9		9.3	53	2.3	56.4	K
9.0		29.7	48.5		8.3	41	19.3	58.2	L	9.5	6	5.3	48.0		9.5		24.4	29.0		9.4		58.9	28.3	
8.8		46.6	19.6	K	8.7	42	22.6	12.2	K	9.0		12.7	16.0	K	9.0	29	9.3	22.9	B	6.5	54	51.6	42.1	K
9.2	18	42.0	48.8	K	9.3		29.1	13.3	K	9.5	7	2.0	28.9		9.5		15.5	34.4		8.0		54.5	0.5	K
9.5		59.4	36.1		9.5		40.0	49.8		8.9		2.6	22.5		8.5		18.3	42.2	B	9.4	55	5.9	23.9	
8.9	19	2.7	11.9	B	9.5	44	7.2	21.5		9.5		40.3	17.9		8.6		30.9	24.9		8.4		21.3	56.6	K
9.2		18.5	20.6		9.5		26.1	20.5		9.2		46.0	7.7		8.5	30	28.0	16.0		9.5		57.8	14.8	
9.5		56.5	11.3		9.1		38.0	14.0	K	9.5	8	4.7	7.9		9.5		57.2	54.3		9.4	56	12.4	57.4	
9.5	20	58.4	36.8		9.5		41.4	46.7		9.0		47.3	49.4	B	9.5		59.0	21.9		8.5		28.5	20.7	K
9.4	21	29.0	16.5		9.5		53.7	10.4		9.4		50.8	55.2		9.1	31	42.8	58.1	K	9.5		32.6	22.5	B
8.0	22	3.8	44.4	K	8.3		59.4	17.7	K	9.3		53.6	37.8	B	9.5		51.9	3.0		9.5		44.7	51.3	
9.1		34.6	2.4		9.5	46	8.1	27.4		9.5	9	55.3	2.0		9.5		56.5	48.0		8.5		58.9	18.2	K
9.5	23	25.8	13.3		9.3		11.7	5.8		9.5	10	4.6	51.3	B	9.4	32	25.0	30.0		8.4	57	9.6	7.4	K
9.5		26.7	17.9		9.3		40.8	12.2		9.0		5.3	16.2		8.8		40.5	10.5	K	9.5	1	8.1	24.6	
9.4		27.3	33.3		7.5		43.2	7.2	K	5.8		34.5	58.2	K	8.8	33	5.0	26.6		6.5		29.2	16.3	K
9.3		38.6	38.9	K	9.5	47	21.5	55.4		9.2		54.7	32.8	K	9.5		31.7	2.5		8.9		58.9	46.9	K
9.5	24	34.1	43.3		8.9		23.4	37.2		9.5	11	54.8	11.5		9.4		45.4	35.6		9.5	4	32.6	22.5	
9.5		55.5	1.8		8.8		28.7	19.5	K	7.8	12	22.9	51.3	K	9.3		55.2	17.5	B	9.5		39.7	27.6	
8.8	25	3.2	10.5		9.5		58.4	46.4		9.0		45.5	28.4		5.0	34	58.0	5.9	K	9.5	5	20.4	7.5	
9.5		38.8	17.4		9.5	48	13.3	20.9		9.5		50.0	10.7	B	8.9	35	17.0	31.3	K	9.5		49.6	20.4	
9.5	26	27.5	44.7		9.5		13.6	8.3		8.6		57.9	24.3	K	9.2		19 3	35.0		9.5	7	30.5	40.9	
9.0	27	9.1	42.5		9.5		16.1	37.1		9.5	14	8.7	49.8		9.5		31.4	55.0		9.5	8	0.7	58.6	
7.3		31.4	32.0	R	9.5		26.9	57.4		8.8		14.0	19.1	B	7.8	36	0.4	23.2	L	8.6		19.6	56.7	K
9.5	28	3.9	50.4		9.5		56.7	50.2		8.3		54.0	28.7	K	9.3		15.9	11.1		9.2		56.8	56.8	K
9.5		12.1	0.9		6.5	49	30.6	4.9	K	9.2	15	39.5	37.3		9.3		50.5	28.4		9.2	9	54.7	5.5	K
9.5		18.5	15.3		7.7		46.8	49.1	K	9.1		53.7	7.2		9.3		54.1	3.1		9.5		59.8	6.5	B
9.3		22.2	40.3		9.0	50	15.4	31.5		9.3	16	2.1	48.7		9.5	37	44.4	20.8		7.7	10	56.4	0.9	K
9.5	29	4.1	11.0	B	9.5	51	23.3	4.4		8.0		16.9	0.9	K	9.5		45.0	15.0		9.0	11	27.7	47.5	K
9.3		19.7	53.4		9.5		33.3	43.5		8.1		55.2	0.9	K	9.2		54.9	5.2	B	9.0	12	0.8	54.6	K
9.5		36.7	48.6		9.5		51.9	26.4		9.0		59.2	4.3	K	9.0		55.7	26.3		9.5		40.7	15.9	
9.3		39.2	24.2	K	9.4	52	9.2	29.2		8.6	17	0.8	20.2		9.5	38	25.0	28.4		9.5		41.1	52.4	B
9.5		49.1	8.2		8.3		17.2	3.1	K	9.5	18	15.0	33.9		9.4		26.8	7.6		9.5		44.0	49.4	
9.3		57.6	55.5	B	8.6		18.9	10.7	K	8.5		18.4	23.6	K	9.0		40.9	21.1		9.5		58.6	49.1	
9.4	30	6.7	54.0		9.5	53	6.7	30.3		9.5		33.9	17.1		9.5	39	38.4	3.2		9.4	13	19.0	52.0	B
9.5		10.8	59.3		6.5		51.3	42.7	K	9.5		44.0	41.8		9.5		38.5	22.2		5.7		29.7	5.5	K

801—860				861—920				921—980				981—1040				1041—1100			
	5ᵐ	+27°			5ᵐ	+27°			5ᵐ	+27°			5ᵐ—6ᵐ	+27°			6ᵐ	+27°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	25 56.9	2.2		9.5	37 22.5	11.3		9.4	47 51.4	50.2		9.4	57 29.3	54.7		9.0	7 57.3	53.9	R
8.8	26 9.7	24.9	L	9.5	34.0	14.9		8.9	58.1	34.4	B	9.4	29.4	38.4	B	9.5	8 6.3	3.0	
9.1	14.9	43.4		9.4	51.9	36.3		7.7	48 0.9	16.9	K	9.2	38.7	6.0		9.1	14.2	20.3	R
9.4	37.2	13.0		9.2	56.7	52.6		9.5	8.0	38.9		9.4	40.0	54.5		9.5	15.0	40.8	
9.5	48.5	6.3		9.5	38 30.5	48.4		9.4	11.8	20.6	K	9.5	47.6	58.9		9.0	19.7	7.2	K
7.1	50.0	33.7	K	8.0	38.6	34.5	L	9.3	18.8	35.7		9.4	58.4	33.6		9.5	20.3	47.0	
9.4	27 1.3	6.8		9.5	38.7	49.1		9.3	25.4	52.2		9.4	58 10.7	41.5		9.5	31.7	50.7	
9.5	14.0	49.0		9.5	39 9.2	7.1		9.5	40.0	34.2		9.3	20.3	49.6		9.3	35.3	13.7	
9.5	14.6	22.2		9.4	10.3	10.6		9.2	42.8	6.0		9.5	26.3	17.0		9.0	48.4	14.4	K
9.4	17.8	11.3		9.5	28.1	7.5		9.5	46.4	41.0		9.5	29.5	25.2		9.5	49.4	32.9	
8.5	32.8	48.8	K	9.5	35.0	8.5		9.5	49 2.8	1.5		8.5	31.3	52.7	K	9.2	57.2	44.5	
9.3	42.1	23.6		9.5	38.3	56.5		9.1	20.7	43.5	K	9.2	33.4	57.4		9.5	9 3.6	0.9	
9.4	56.7	31.8		9.4	39.5	16.9		9.5	35.3	49.2		9.5	38.0	9.1		9.1	11.3	23.2	
9.5	28 6.2	8.3		8.1	43.4	18.7	L	9.5	44.8	3.5		8.2	52.3	26.6	L	7.1	16.3	15.3	K
9.4	10.9	10.6		9.5	45.1	8.6		8.2	47.9	35.4	K	9.5	59 11.2	33.8		9.5	38.4	47.6	
9.5	25.3	50.5		9.3	40 12.2	40.9		9.0	53.7	45.8	K	9.5	15.2	57.2		9.4	46.2	43.0	
9.5	26.1	18.3		9.3	20.3	55.7		9.5	53.8	17.4		9.2	15.3	20.3	B	9.5	49.1	49.2	
8.8	35.8	10.7	K	9.5	28.0	1.1		7.9	59.5	32.5	K	9.4	17.1	19.6		9.5	55.0	51.4	
9.4	29 0.4	42.3		9.4	30.2	7.2		9.4	50 3.2	39.4		9.3	17.3	20.0	B	9.3	57.5	57.0	
9.3	31.1	58.6		7.0	31.8	30.0	K	9.0	3.8	33.2	L	9.1	23.3	48.7		8.4	10 11.8	2.5	L
9.5	32.7	15.9		8.8	39.9	4.8	K	9.5	14.4	3.6		9.3	27.4	10.0		9.2	16.4	59.9	K
9.3	35.1	55.4	B	9.3	47.5	41.8		9.4	39.7	12.0		9.5	35.5	26.0		9.2	18.0	17.1	
9.0	59.8	54.7		9.5	41 3.5	2.3		7.0	51 0.6	15.5	K	9.5	49.9	41.2		9.3	21.3	6.8	
9.4	30 4.0	47.5		9.5	6.9	27.5		9.5	44.7	49.7		9.5	0 10.6	57.0		9.1	48.3	11.5	B
9.1	5.0	24.8		9.5	27.9	32.7		6.8	54.0	33.5	K	9.4	14.3	20.8		9.4	54.3	13.3	
9.5	5.4	33.1		7.2	33.8	27.3	K	9.4	54.8	0.5		8.0	21.3	12.6	K	8.3	58.2	26.5	L
9.5	24.2	43.3		7.7	41.6	38.1	K	9.5	52 9.5	19.5		9.5	51.0	48.1		9.1	11 6.8	2.1	
8.8	37.8	41.6	K	6.5	50.3	55.1	L	9.1	13.1	16.3		9.4	1 13.2	2.6		8.7	9.3	40.7	
9.5	39.1	3.3		9.5	42 8.7	24.5		9.5	19.0	32.1		9.5	33.3	30.1		9.0	18.7	20.3	L
9.2	50.2	23.8		9.1	14.6	37.3		9.4	19.6	42.0		9.5	41.3	18.2		8.5	19.0	40.9	B
9.2	31 23.8	49.2		8.3	32.0	47.8	K	9.5	20.0	3.6		9.3	43.5	56.1		9.4	19.0	37.9	
8.4	26.7	21.5		9.5	43 32.8	40.9		9.5	39.0	41.8		8.9	2 27.3	5.6		9.4	32.1	39.2	
8.2	33.8	42.0	K	9.5	35.1	16.4		9.5	56.1	11.5		8.2	42.3	9.8	R	9.3	33.2	45.8	
9.4	51.5	21.1		9.4	45.5	19.9		9.5	57.5	5.6		9.4	46.6	57.0		9.5	41.3	14.9	
9.3	55.4	35.8		9.0	47.6	57.4		8.9	58.3	12.0	K	9.5	52.4	11.7		9.5	12 14.3	5.7	
9.4	32 2.3	22.5		9.5	58.4	33.2		9.1	53 4.4	45.2		9.5	3 7.3	52.0		9.5	17.4	11.4	
8.7	20.8	33.5		9.1	44 3.4	35.0	B	9.5	12.5	1.7		9.5	12.3	30.0	R	9.5	18.2	51.9	
9.3	25.2	36.0		9.1	5.8	0.4		9.2	16.4	28.1	K	9.5	36.3	41.8		9.4	40.5	51.2	
8.4	55.9	41.3	L	5.5	12.8	34.2	K	9.1	26.3	24.4	K	8.5	54.3	27.5	K	9.3	46.3	1.9	
9.2	59.8	3.7		9.0	34.3	29.5	K	9.3	26.7	54.0		9.5	4 0.2	58.8		9.5	47.3	11.7	
9.4	33 39.6	36.6		9.3	38.0	22.1		9.5	48.9	30.3		9.5	7.5	40.4		9.2	49.3	35.7	K
9.4	42.0	33.0		9.3	46.8	1.6		9.4	54 0.0	26.2		9.4	18.2	18.7		9.0	49.8	34.0	K
9.3	43.0	23.9		9.4	45 28.7	17.9		8.7	19.6	38.3	K	9.5	21.3	14.7		9.3	13 11.8	24.9	
9.5	34 12.8	53.5		9.5	44.6	33.0		9.2	20.0	42.9		9.0	25.8	12.2	K	9.5	16.0	14.1	B
9.5	26.1	35.6		9.5	47.3	8.1		9.5	41.5	48.3		9.5	33.6	38.1		9.5	17.0	17.9	
7.8	43.8	13.3	K	8.0	59.2	18.4	K	7.8	53.9	34.2	K	9.5	55.3	49.8		9.5	19.7	14.5	
9.4	45.0	27.6		9.1	46 0.8	3.8	K	9.5	55 43.2	48.8		9.5	5 14.3	17.2		9.4	22.5	10.5	
9.5	35 8.6	52.8		9.4	6.5	7.6		8.7	50.8	1.1	K	8.2	28.8	38.9	B	9.0	42.3	32.5	
7.8	14.8	39.7	K	9.2	11.6	53.0		9.2	53.3	43.1		9.1	37.5	24.8		8.4	54.3	30.7	L
9.0	22.8	9.6	K	9.5	12.5	18.5		9.5	56.5	58.0		9.0	44.8	24.1		7.8	58.3	47.7	K
9.5	50.4	52.1		9.2	14.0	4.6	K	9.5	56 36.8	29.2		9.5	49.4	2.5		8.2	14 4.7	14.9	L
9.4	57.8	4.9		9.4	23.1	57.0		9.4	44.7	48.8	B	8.8	50.6	55.6	R	7.8	25.9	11.2	L
9.5	36 17.7	36.0		9.4	27.1	59.8		9.5	50.4	52.3		9.5	6 16.0	32.0		9.4	36.4	21.8	
9.5	18.3	5.6		7.7	33.0	40.9	K	9.5	57 0.5	49.4		9.5	38.9	8.1		9.5	15 0.3	4.8	
9.5	21.3	21.4		9.2	44.7	56.7	K	8.3	7.3	56.4	L	9.2	42.3	15.7		9.4	5.0	14.7	
9.1	26.8	11.3	K	9.5	54.0	51.8		9.5	13.0	52.5		8.0	45.3	54.5	K	9.5	27.3	34.0	
8.9	33.8	47.4	K	9.5	47 10.8	0.2		9.3	13.5	54.6		9.3	47.0	41.2		9.5	37.9	47.3	
9.1	49.4	53.3		8.8	11.2	8.8	K	9.3	15.3	42.2	B	9.5	7 17.2	40.0		9.5	16 47.0	55.7	
9.5	37 2.8	4.4		9.5	26.8	48 6		8.5	24.4	3.8	K	9.4	20.3	26.5		9.5	47.3	42.4	
9.5	3.1	47.4		9.5	48.0	53.0		9.5	26.3	20.2		9.3	24.3	15.9	R	9.3	55.3	34.7	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	16ᵘ	+27°			16ᵘ	+27°			16ᵘ—17ᵘ	+27°			17ᵘ	+27°			17ᵘ	+27°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.6	5 57.2	59.0	K	6.5	31 57.8	20.8	K	9.5	50 33.5	45.9		9.5	10 38.7	7.4		9.0	28 35.0	13.0	K
9.5	6 24.2	53.0		8.8	32 11.9	37.7	K	9.2	38.4	6.5	K	8.8	46.5	50.4		9.5	55.0	37.3	
6.5	47.0	3.1	K	9.0	20.5	44.9	K	9.3	57.5	47.6	B	9.2	11 16.0	7.2	K	9.4	29 11.5	38.1	
9.4	50.8	50.8		9.0	33 18.4	10.5	B	9.1	51 6.0	21.4	K	8.8	12 6.4	3.8	K	9.5	28.8	38.7	
9.5	7 6.6	5.7		9.5	18.4	5.5		9.3	45.0	7.4	B	9.5	17.0	37.9		9.2	39.2	44.0	
9.5	9.2	33.8		9.1	45.8	17.8		9.5	52.4	7.2	B	9.0	23.2	52.5		9.0	30 14.4	34.9	K
8.3	17.5	26.5	K	9.4	34 59.5	22.2		9.5	52 18.2	8.4	B	8.0	36.3	5.5	K	9.4	34.0	56.2	
9.2	25.8	40.5		6.0	35 45.6	12.3	K	8.3	59.9	52.9	K	9.1	13 0.7	3.3	K	9.2	36.5	11.4	K
9.4	32.3	3.2		9.4	51.3	45.7		9.2	53 0.4	21.5		9.5	14.2	44.7		7.0	36.5	40.9	K
9.3	42.2	14.6		9.5	36 14.9	15.5	B	9.4	6.2	43.5	B	7.1	36.5	26.3	K	9.1	42.9	7.0	K
9.5	8 38.8	0.5		9.5	37 14.0	35.2		9.1	54.8	38.2		9.5	14 29.7	52.7		9.5	45.9	19.1	
9.5	39.4	32.2		9.4	17.0	49.4	B	9.5	58.5	6.8		8.7	51.0	40.2	K	9.0	31 19.7	48.2	
6.5	9 53.1	48.4	K	9.5	33.3	33.0	B	7.2	54 4.3	32.9	K	9.5	15 24.4	34.5		9.2	27.8	58.9	K
9.4	10 50.1	14.6		9.5	40 3	4.9	B	9.4	22.1	15.3	B	9.0	40.3	4.4	K	9.5	32 2.0	45.0	
9.5	51.0	48.0	R	9.5	57.0	31.3		9.5	43.9	3.5		9.0	51.7	20.8	K	9.5	10.6	57.4	
8.4	59.8	39.5	B	9.5	39 4.8	16.7		9.5	59.8	16.5		9.5	16 55.4	22.0		9.0	38.4	40.9	
9.5	11 30.9	32.9		9.4	5.5	26.4		9.3	55 8.7	21.3		7.8	17 3.8	59.7	K	8.9	33 13.4	20.0	
9.3	13 8.2	10.5		9.5	16.0	29.0		6.5	20.5	24.8	B	9.5	16.5	2.2		7.5	17.4	8.8	K
9.5	11.0	42.0	B	9.4	32.3	43.4		9.3	37.5	15.5	B	9.0	29.0	53.9		9.3	25.5	38.0	
9.3	14.8	45.9	B	8.2	41.8	23.5	K	9.4	56 6.6	42.5		9.0	33.5	52.5		9.3	51.9	27.7	K
9.4	27.8	41.7	B	8.6	48.7	26.8	K	9.5	40.7	40.2		9.5	18 23.6	56.9		9.5	53.7	50.1	
8.8	53.3	7.9	K	9.1	40 18.8	24.1	B	9.0	57 1.9	58.4		9.5	19 2.3	16.7		9.5	58.9	15.5	
7.5	14 16.5	41.2	K	8.5	29.7	21.7	K	9.2	13.2	0.7	K	9.5	22.7	34.1		9.4	34 51.5	28.5	B
9.5	37.1	42.2		9.1	32.6	42.9		9.4	58 11.9	12.1		9.5	28.8	54.5		9.5	35 1.8	23.3	
9.3	46.1	39.8	K	9.4	53.0	20.1		9.3	22.2	56.7		8.5	35.6	46.0		9.1	44.0	57.3	
9.2	15 8.5	55.7		8.7	53.5	11.5	L	9.5	23.8	6.8		9.5	37.1	56.3		9.0	45.0	46.9	K
9.2	8.8	51.4		9.3	41 5.6	16.8	B	9.5	25.2	30.1		9.1	53.4	26.9	B	9.0	50.6	4.4	K
9.3	10.7	37.2	B	9.5	31.2	54.3	B	8.3	41.0	15.0	K	7.6	57.4	26.3	K	8.8	52.4	56.4	K
8.5	22.2	43.2	K	9.1	46.8	7.4		9.3	52.4	5.8		6.5	20 12.2	0.2	K	9.4	57.4	3.4	B
9.2	32.8	33.5	K	9.5	42 11.3	25.7		9.4	56.0	49.1	B	9.4	18.3	16.0		7.1	36 17.4	42.4	K
8.8	58.8	44.6	K	9.3	32.4	39.7		9.1	59 14.0	21.2	K	9.3	28.7	52.2		9.3	32.2	47.5	B
9.4	16 15.7	48.7	B	9.5	36.2	5.4		8.1	16.1	3.6	K	9.4	38.0	13.9		9.2	37.9	49.5	
9.5	43.5	15.3		9.4	43.5	15.5	B	9.5	20.3	43.3		7.7	48.7	21.5	K	9.2	55.7	40.3	K
9.4	57.5	26.3		9.5	43 15.3	1.6		9.3	31.5	7.8		9.3	21 6.2	40.6		9.5	37 4.5	14.6	
9.5	17 4.1	48.7		9.1	44 9.1	4.2		9.5	52.1	21.9		9.5	25.9	4.0		9.2	20.0	46.4	K
9.5	4.6	46.2		9.3	9.6	18.8	B	9.4	0 6.0	14.2		9.5	33.6	5.2	B	9.5	35.4	26.6	
9.3	8.7	48.5	B	9.5	18.0	32.3		9.5	11.0	23.7		8.4	47.2	8.1	K	7.9	39.8	6.1	K
9.1	36.2	28.5		8.9	18.1	13.1	B	9.5	19.3	19.9	B	9.5	22 6.2	15.9		9.3	38 32.0	36.8	K
8.5	18 4.5	40.7	L	9.1	27.2	25.3		9.1	35.7	42.2		8.3	18.0	47.0		9.4	33.8	35.2	B
9.4	30.8	58.5		9.5	34.0	18.2		9.2	55.1	41.0		9.5	23 10.4	49.0		9.5	39 3.3	40.0	
9.4	53.4	0.7		9.5	53.5	52.5		8.9	1 4.8	11.9		9.2	17.2	32.0	K	8.8	4.7	30.0	L
9.3	19 31.9	56.6		8.5	45 6.3	21.4	L	9.5	13.7	38.7	B	7.9	30.5	59.7	L	9.4	22.6	23.7	B
9.0	20 8.2	58.2		9.5	53.2	8.0	B	8.2	58.4	19.7	L	9.5	42.5	27.3		9.0	30.4	4.1	
9.1	40.1	48.4	K	9.3	47 35.7	9.8		7.7	2 9.9	17.1	L	8.3	49.9	37.4	K	8.9	34.8	53.1	K
9.1	40.4	25.4		9.5	48 15.0	57.0		9.5	55.4	35.9		9.1	24 1.9	32.5	K	9.5	44.5	5.0	
8.9	21 23.1	12.6		8.5	17.4	49.8	K	8.7	3 7.0	48.8	K	9.1	48.0	16.8	K	9.4	48.7	55.3	
9.5	23.8	34.0		9.2	30.6	50.8	K	9.2	35.8	4.4	K	9.5	53.2	45.5		9.0	40 44.3	17.3	K
9.2	36.8	58.7		9.1	32.2	32.7	B	9.2	42.4	24.4		9.3	25 11.5	21.7		3.5	47.8	48.0	K
9.0	22 27.8	28.8	K	9.2	36.8	23.8		9.2	50.0	24.4	K	9.5	16.5	33.5		9.4	41 26.9	28.6	
9.5	23 5.4	56.4		9.1	40.7	39.4	B	9.3	4 12.4	48.4		9.5	35.0	28.6		9.5	44.3	11.3	B
9.5	10.1	22.6		9.5	44.7	52.1		9.5	50.2	46.4		9.5	43.1	9.0		9.1	56.7	51.1	K
9.5	40.2	42.5		9.3	59.3	10.5		9.3	58.4	14.3		9.1	26 2.1	30.5	K	8.5	42 34.4	7.3	
9.3	46.4	3.1	K	9.4	49 32.4	8.2		9.4	5 8.5	53.4		9.1	7.0	28.0		9.5	36.4	57.5	
9.5	24 33.4	37.8		9.3	43.2	25.0	B	9.1	12.0	21.8	K	9.1	46.2	57.8		9.5	43 22.6	45.0	
8.9	54.7	58.3	K	9.4	55.2	54.6		9.5	33.2	7.5		9.4	27 4.2	31.1	B	9.3	44 12.0	44.3	
9.5	26 52.1	11.9		9.5	55.8	5.2		9.5	6 3.6	30.0	B	9.5	23.5	59.8		9.4	23.6	3.6	
9.3	30 30.0	2.7	K	9.5	50 6.7	40.2		9.0	5.3	21.7	K	9.4	49.2	4.7		8.4	47.6	58.3	B
9.3	36.4	27.4		9.4	8.6	28.5		9.2	11.4	22.5	K	9.5	28 2.8	10.5		9.0	45 15.4	47.6	
8.2	31 12.4	3.7	K	8.6	20.5	26.6	K	9.4	8 4.1	57.7		9.5	32.3	58.8		9.4	17.5	34.5	
8.0	51.2	40.6	K	9.5	28.7	0.3		6.8	10 10.9	18.7	K	9.5	34.3	21.6		8.6	20.3	14.9	L

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ʰ—18ʰ	+27°			18ʰ	+27°			18ʰ	+27°			18ʰ	+27°			18ʰ	+27°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.2	45 22.3	6.9	K	9.4	2 5.8	39.7	B	9.5	20 24.4	48.5		9.5	36 6.1	54.7		9.1	46 18.3	9.6	
9.5	46 0.5	15.8		9.3	21.0	16.2		9.3	35.4	28.4		9.5	20.4	45.0		7.6	18.3	5.2	B
8.7	24.9	55.0	K	9.1	46.4	55.6		8.5	42.7	15.3	K	9.2	23.1	1.1	K	9.1	20.2	16.3	
8.5	35.7	3.4	L	9.5	52.4	24.0		9.3	49.0	17.4	K	8.7	27.4	30.2	S	9.2	21.1	4.2	
7.7	45.9	12.5	K	9.5	3 17.4	26.4		9.2	54.2	52.2		7.5	41.2	59.4	K	9.2	31.8	11.0	B
8.1	51.7	52.4	K	9.3	48.5	47.1		9.4	21 19.5	50.2		8.3	44.7	31.9		9.5	47 6.3	10.5	
9.2	47 3.0	51.9		9.5	4 28.9	31.2		9.4	25.4	39.3	B	8.5	58.4	50.2		9.2	17.6	44.3	K
8.9	4.2	34.7	K	9.3	5 7.7	7.5	B	9.5	31.6	7.0		9.0	37 41.4	37.0	B	9.5	19.8	33.7	
9.4	9.1	42.7		8.3	8.7	56.6		9.0	42.4	24.6	K	9.0	42.3	35.3	S	9.5	48 10.4	17.4	
8.8	39.1	23.3	K	9.4	11.4	43.9		9.5	45.3	38.3		9.5	53.6	18.8		6.2	27.3	43.6	K
9.4	43.1	31.5		9.3	22.1	19.1		9.3	22 1.6	38.0		8.4	57.0	58.4	K	9.4	36.1	52.4	
9.0	48 5.2	10.1	K	9.5	32.0	44.3		9.0	14.0	2.3	B	9.5	58.1	1.8		9.5	42.7	14.4	
9.3	8.0	16.5		9.5	44.3	36.3		9.2	17.8	16.8		9.5	38 26.2	11.2		9.4	58.8	39.2	
7.8	21.3	22.7	K	8.7	58.2	47.5	B	9.2	27.7	18.2		9.5	29.5	23.5		9.5	49 8.2	35.2	
9.3	40.4	58.4		8.7	58.4	21.8	K	9.5	23 20.4	39.8		7.3	37.0	56.9	K	9.0	9.4	42.8	B
7.8	44.4	38.3	K	9.5	6 7.1	52.5		9.5	28.6	27.1		8.0	43.0	23.3	K	9.5	26.1	12.5	
9.4	49 5.5	15.0		8.2	22.8	37.1	K	9.0	34.7	22.5	K	9.5	54.3	14.4		8.9	27.2	33.7	
9.5	50 14.2	3.6		9.5	51.6	30.8		9.5	24 1.0	32.6	B	9.5	57.8	23.3		9.0	28.0	36.4	
9.2	18.5	56.4		9.3	53.1	25.0		9.5	8.8	54.2		9.2	39 17.9	43.6		9.5	40.3	18.6	
9.3	30.0	33.3		9.5	7 10.8	57.0		9.5	44.0	59.7		9.5	36.7	52.7		9.3	50 7.4	11.9	
9.0	31.3	27.4	K	9.5	32.5	0.8		9.5	53.7	58.9		8.9	48.5	17.6	K	9.5	9.1	0.6	
8.3	52 3.0	51.9	K	9.4	8 49.9	44.7	B	9.5	25 3.1	0.5		9.4	53.9	50.1		9.4	12.8	5.0	
7.9	24.9	24.2	K	9.4	50.2	48.3		8.6	32.8	44.5	K	9.5	57.4	50.9		9.5	13.0	18.3	
9.2	30.5	18.5		9.2	9 7.8	9.3		9.1	56.4	48.4	K	9.4	57.5	51.6	B	9.3	17.9	16.1	
8.5	37.4	59.0	K	9.3	13.1	57.0		9.4	26 31.9	17.7		9.3	40 4.5	42.2		9.4	26.7	38.2	
9.4	53 4.5	2.4		9.4	15.0	53.6	B	9.4	49.9	47.5	B	9.2	9.0	39.2	K	9.1	28.1	1.1	K
9.0	7.6	26.2		9.1	30.1	34.1	B	9.5	27 9.1	34.4		9.1	33.4	11.3		9.3	50.4	35.7	
9.5	12.8	32.1		8.0	51.1	8.2	K	9.5	11.3	1.8		9.1	40.1	7.0	K	9.0	57.8	31.0	
9.5	53.0	51.0		9.5	10 23.2	46.4		9.5	28 26.9	29.1		9.2	42.0	11.0		9.5	51 6.0	13.4	
9.4	54 17.1	4.6		9.3	41.2	56.6	B	9.4	29 4.9	10.4	B	9.3	47.4	17.9		8.9	7.3	6.2	K
9.1	57.4	57.1	K	8.2	57.1	3.0	K	9.3	36.1	8.3		8.0	59.0	19.9	L	9.5	11.0	21.8	
9.0	55 13.8	47.9	K	9.4	11 14.0	51.4		9.5	42.5	53.1		9.1	41 14.4	18.9		9.1	11.5	35.1	
9.2	26.7	49.4	K	9.3	47.1	15.7		8.0	58.6	5.8	K	9.3	21.9	36.3		9.5	21.9	10.9	
9.1	31.3	10.7		8.8	52.4	38.4	K	9.5	30 12.4	11.9		9.5	25.1	4.8		9.3	23.7	44.5	
9.4	34.3	7.7		9.1	12 41.1	4.5	K	9.5	15.8	47.7		8.5	49.5	24.8	L	9.3	24.1	48.0	
9.5	36.1	37.1		9.5	43.3	45.6		9.3	42.4	43.0		9.5	55.4	29.7		9.0	43.0	35.2	
9.2	37.4	1.8		8.8	13 3.3	9.1		9.2	43.6	32.6		9.5	42 18.6	45.5		9.0	43.5	29.5	K
8.9	49.8	8.2	B	9.5	27.0	1.0		9.4	44.5	27.6		9.5	40.0	12.4		9.5	52 5.4	20.1	
9.5	56 4.2	37.7		9.4	44.9	47.4	B	9.2	49.1	2.9		9.5	52.5	56.0		9.5	8.6	37.1	
9.1	19.4	56.1	B	8.2	50.6	26.7	K	9.5	54.3	24.0		9.5	53.7	29.1		9.4	14.2	58.6	B
9.1	27.6	38.8	K	9.0	59.7	53.4	K	9.1	55.2	50.1		9.4	55.1	1.5		9.4	15.9	40.4	
9.3	28.3	53.2		9.1	14 42.4	37.0		9.3	59.0	21.0		7.5	43 27.4	33.4	L	9.3	19.0	41.1	
8.9	57 32.4	51.1		7.0	15 4.6	28.4	L	9.4	31 3.6	59.3		9.5	32.8	54.5		7.6	21.0	58.4	L
9.2	43.0	30.2	K	9.4	28.4	19.1		9.5	42.4	21.8		9.2	36.0	18.3	B	8.5	28.0	33.7	K
9.5	43.5	12.9		8.9	45.9	46.0		9.5	53.9	40.1		8.7	37.0	38.7		8.5	28.5	35.7	K
8.5	58 45.4	55.6	K	9.4	17 1.4	36.7		9.3	32 29.1	23.6		8.6	39.9	32.8	B	8.3	31.6	31.7	K
9.5	51.4	22.2	B	9.0	6.6	26.7	K	8.8	35.1	52.5		9.5	50.5	44.1		9.5	42.9	52.7	
7.5	52.6	6.4	K	9.3	33.7	27.0	K	9.2	57.4	30.5		9.5	44 26.3	41.5		9.0	52.0	35.5	K
9.5	58.5	55.9		9.4	44.1	56.8		8.8	33 2.9	44.1		9.5	28.9	32.8		9.5	53 6.3	52.0	
9.5	59.0	47.8		8.5	44.2	26.3	K	9.5	22.4	56.7		9.5	40.0	21.7		9.5	8.0	56.2	
7.9	59 25.5	32.5	L	9.2	18 5.6	43.9		9.5	33.4	49.1		9.4	56.2	26.6		9.5	10.4	45.1	
9.5	0 3.6	30.1		9.5	28.9	21.1		9.1	34 11.5	56.6		8.2	45 3.1	33.7	K	9.5	17.2	11.8	
9.5	57.5	3.5		9.1	29.4	43.9	K	9.0	21.5	52.0		9.5	6.9	51.3		9.0	17.8	18.2	
9.4	59.5	14.2		9.2	37.0	42.2	K	9.5	35 6.0	26.9	B	9.4	7.0	44.5		9.2	48.4	23.2	B
9.4	1 1.3	16.6		9.0	19 11.8	31.9	R	9.2	8.8	45.0	K	9.3	7.7	14.2	B	8.7	48.6	2.5	
8.5	3.6	38.0	K	6.5	13.7	19.4	S	9.5	9.5	37.9	B	9.5	24.0	22.7		9.5	49.0	36.0	
9.3	5.8	46.2		9.1	16.4	52.8		9.2	10.3	57.6		9.3	24.0	55.6		9.4	54 4.2	45.9	
9.5	7.1	56.5		9.4	31.1	53.3	B	9.0	12.6	15.7		9.5	47.5	45.7		8.7	31.0	26.6	
9.4	29.9	34.2		8.2	51.7	37.4	L	9.2	23.8	46.7	K	9.5	53.1	16.3		9.5	39.3	4.1	
8.4	2 4.6	22.7		9.0	20 0.6	0.6		8.0	33.0	47.4	K	9.5	54.6	40.5		9.5	45.4	58.2	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ—19ᵘ	+27°			19ᵘ	+27°			19ᵘ	+27°			19ᵘ	+27°			19ᵘ	+27°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	54 58.8	7.2		9.5	4 22.2	36.7		9.0	11 4.8	6.4		9.5	18 40.8	8.4		9.3	30 3.0	57.3	
9.5	55 13.2	54.0		9.5	30.0	43.4		9.4	12.6	37.6		9.5	46.0	48.5		9.2	33.6	54.8	
8.0	23.3	2.3	L	9.5	32.8	18.3		9.5	29.4	25.6		9.3	19 1.2	33.5		9.3	40.7	47.4	
8.8	42.5	11.1		9.5	35.0	55.2		8.9	42.7	40.2	K	9.0	3.5	18.2	K	7.8	50.9	33.4	K
9.2	43.3	5.7		9.4	5 4.6	24.1		9.5	48.8	25.1		9.5	12.3	33.1		9.3	31 5.9	30.4	B
8.3	55.4	54.9		9.3	5.6	48.4		8.7	48.9	36.1	B	9.4	34.3	49.8	B	8.4	18.8	52.1	
8.4	56 0.7	14.7	B	9.2	5.6	8.2	K	9.0	53.9	34.8		9.3	37.4	53.5	K	9.0	47.8	5.9	K
8.8	3.6	5.6	K	9.3	7.9	52.7		9.0	59.3	57.0		9.5	53.5	19.9		9.3	53.5	59.8	
9.5	17.2	21.4		9.5	11.1	18.0		9.4	12 1.4	50.7		9.4	20 16.1	28.8		9.4	32 33.8	20.1	B
9.3	19.5	47.7	B	9.3	15.3	43.0	B	9.5	7.5	59.4		9.1	39.8	5.2	K	9.3	56.0	45.2	
9.2	25.7	25.0		9.5	25.6	45.1		9.2	9.2	33.8		7.8	40.1	1.9	K	9.3	33 0.6	45.9	
8.8	29.0	35.6		9.3	35.4	18.3		9.4	15.1	38.6		9.3	45.0	29.4		8.7	6.3	7.6	K
8.7	29.5	36.2		9.5	38.4	52.0		8.9	19.6	23.3	K	9.3	21 4.5	52.4		9.1	32.1	57.3	
9.2	31.9	45.1	R	9.0	41.0	6.5		9.5	29.2	35.0		9.3	14.6	39.1		8.5	41.5	48.7	K
9.5	47.0	3.8		9.1	49.9	21.8		9.3	37.9	20.6		8.8	28.1	43.5		9.5	41.6	43.3	
9.2	58.8	1.0	K	9.5	55.1	30.6		9.3	39.1	35.0		9.5	56.0	25.2		9.5	49.8	30.5	
9.1	57 6.2	1.5	K	9.3	59.0	42.3		9.5	39.3	57.0		8.2	22 24.1	37.3	K	8.7	52.7	23.0	
9.3	7.1	29.7		9.1	6 4.1	23.1		9.3	41.3	57.0		9.2	29.9	13.7	B	9.5	59.3	29.6	
9.5	19.3	49.4		9.5	9.6	40.7		8.9	13 10.0	47.5	R	9.5	31.6	16.9		9.1	34 19.6	0.6	
9.5	21.1	19.3		9.2	14.9	56.2	K	6.7	13.6	0.1	L	8.8	39.0	4.1	K	9.4	32.5	58.1	
9.5	25.0	7.2		9.5	23.6	24.6		9.5	22.8	27.7		9.5	45.0	16.6		8.0	53.1	23.3	K
9.5	25.5	9.2		9.5	25.8	24.6		8.9	31.7	17.4		9.3	51.5	21.3		8.2	35 1.1	26.0	K
9.4	40.3	58.2		9.5	40.1	7.9		9.3	32.9	22.4		9.5	55.8	56.3		9.3	11.8	50.0	
9.1	49.8	7.9	B	9.4	44.5	41.6		9.5	46.7	34.8		8.0	23 16.1	37.6	K	9.4	18.5	12.0	
8.8	51.5	41.3		8.9	49.9	23.7		9.5	54.3	8.7		9.0	29.5	17.8		9.4	21.6	41.6	
9.1	58 3.0	17.3		9.1	52.7	31.9		9.4	14 15.8	28.4		9.3	32.0	45.7		7.7	27.4	21.8	K
9.5	16.8	30.9		8.6	7 1.6	27.0		9.5	19.7	32.9		9.0	52.3	3.5		9.0	37.2	2.0	
7.4	31.8	6.3	K	9.5	14.5	44.5		7.9	19.9	38.4	L	9.5	24 20.6	54.9		9.0	37.3	2.6	K
9.0	43.0	21.1		9.5	18.9	55.0		9.3	26.0	42.0		8.9	44.1	58.8	B	9.3	37.8	35.6	
9.3	43.5	34.2		8.7	27.4	25.0		9.3	33.1	11.7		3.0	53.1	39.3	S	9.3	57.0	36.8	
9.1	45.5	7.7	B	9.5	28.8	55.1		9.3	15 2.3	13.6		6.5	54.1	39.6	L	7.1	57.4	2.7	K
9.4	47.3	17.4		9.4	32.1	43.5		9.4	17.4	25.3		8.9	58.2	17.4		9.4	36 1.6	4.7	
9.4	51.1	9.2		9.5	32.6	55.5		9.4	21.6	8.5		8.7	25 16.4	1.8		9.2	6.9	36.8	
9.3	59 5.8	29.3		9.3	36.0	19.7		8.9	27.0	47.4		9.0	20.3	27.6		8.8	7.3	50.8	
7.6	9.0	58.4	K	9.5	40.3	59.4		9.5	35.2	33.4		8.9	21.2	38.6	K	9.0	9.5	45.7	
9.5	19.4	40.9		9.2	44.2	29.2		9.5	50.3	37.3		9.2	24.1	35.6	B	9.3	11.8	6.6	B
8.8	20.2	32.7		9.1	49.4	55.9		8.5	50.6	9.9	L	9.0	30.4	6.3	K	9.2	17.0	36.0	B
9.5	23.0	14.9		8.9	50.2	9.8	B	9.1	59.9	25.0		9.4	36.0	40.6		9.5	35.4	53.9	
9.5	44.9	37.1		9.5	8 3.9	37.8		9.5	16 23.1	55.0		9.5	41.9	49.7		9.5	48.4	20.5	
8.0	47.6	11.4	B	9.5	15.8	40.4		9.5	26.8	2.4		9.5	26 1.8	58.1		8.2	52.1	16.1	L
8.0	49.1	4.0	B	9.5	16.5	59.2		9.1	37.4	53.6		8.0	16.1	57.9	S	9.5	54.9	57.1	
9.5	0 5.5	28.5		8.7	17.7	8.1	K	9.4	44.7	37.6		9.5	17.9	5.8		8.6	59.1	42.5	
9.2	13.6	6.1	B	9.2	23.8	58.1		9.4	45.8	27.1		8.8	27.8	15.7		9.5	37 1.0	10.9	
9.5	16.4	39.2		8.9	55.4	19.7		9.3	55.6	52.0		9.2	32.0	38.6	L	7.5	4.8	3.7	K
9.0	33.3	30.3		9.3	58.7	59.8		9.4	17 29.8	30.7		8.7	32.6	36.1	R	8.5	9.1	35.6	K
9.5	44.3	3.0		9.5	9 10.7	33.6		9.3	38.1	38.7		8.7	36.9	6.8		9.5	20.0	1.6	
9.1	1 4.4	31.9	S	7.2	10.8	42.2	K	9.0	49.7	28.8		9.5	38.1	59.8		9.2	33.1	32.6	B
8.6	9.1	32.4		8.7	46.0	53.5		9.5	49.7	35.5		8.4	27 18.4	4.7	K	9.0	34.8	27.9	B
9.5	28.0	44.0		9.5	53.1	38.4		8.6	50.8	41.7		9.0	24.0	14.4		8.9	35.4	29.5	
9.3	32.9	7.0		9.2	54.2	2.7		9.5	52.3	57.0		8.5	25.8	25.5	K	8.5	58.0	59.8	
9.5	34.7	39.4		9.2	10 1.4	40.6		9.3	58.6	23.6		9.4	59.2	4.0		8.0	38 0.9	5.6	K
9.5	47.6	55.8		9.5	6.1	39.4		9.5	59.0	40.8		9.5	59.8	30.9		8.7	8.6	22.4	
8.9	48.5	43.2	K	7.0	7.5	11.8	L	9.4	18 3.0	28.7		9.5	28 4.7	57.9		9.5	21.3	17.7	
9.3	2 11.0	41.4		6.2	10.1	40.1	K	9.5	7.9	18.4		9.4	5.3	10.2		9.3	22.4	40.2	
9.2	28.9	16.7		9.5	16.3	5.7		9.5	9.7	29.7		8.5	30.2	15.1	L	8.8	25.2	9.4	K
9.4	47.4	49.3		9.2	26.4	22.1		9.3	12.6	0.4	B	9.2	53.1	19.7		9.2	33.6	7.0	K
8.5	3 13.1	24.6		9.5	37.6	25.8		9.1	14.8	57.5		8.5	29 29.4	32.1		9.5	37.0	43.9	
9.4	56.2	28.1		9.5	42.2	37.3		9.3	19.3	30.8		8.7	34.2	35.3		9.2	37.9	50.4	B
9.4	4 5.4	15.5		9.5	50.5	28.5		7.0	33.5	48.4	L	9.4	36.2	22.7		9.2	40.2	43.1	
9.0	6.1	39.0		9.5	11 2.7	50.8		8.8	39.9	35.4		9.5	30 2.8	43.0		9.5	48.5	59.6	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	20ᵐ	+27°			20ᵐ	+27°			20ᵐ—21ᵐ	+27°			21ᵐ	+27°			21ᵐ	+27°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	29 35.3	23.8		9.5	40 11.9	8.8		9.2	49 20.8	56.8	B	9.2	1 17.8	59.0		9.5	13 17.7	33.2	
9.5	42.0	46.5		9.3	19.8	17.7		9.3	31.6	22.3	B	8.8	20.3	4.3		8.5	25.7	11.9	L
9.0	49.5	12.4		9.5	26.8	38.4		9.5	40.6	30.7		9.5	55.0	46.3		9.4	56.3	49.3	
9.5	59.2	34.9		9.4	34.0	47.0		7.2	49.6	1.6	K	9.3	2 51.4	13.4		8.2	14 16.7	6.6	K
9.4	30 11.4	9.8		8.3	41.1	35.6		9.5	52.9	21.5		9.4	54.0	21.6		9.2	38.6	44.3	B
9.2	19.4	13.2	B	9.1	55.5	36.7		9.5	57.8	14.5		8.9	3 14.1	45.3		9.5	44.7	16.5	
9.0	25.1	40.8		9.0	41 21.6	2.6	B	9.1	50 15.6	45.8		9.1	38.8	4.1		9.4	47.3	43.3	
9.4	36.3	8.1	B	7.0	42.8	3.9	B	9.5	39.7	30.0		9.5	45.4	42.3		9.5	15 3.1	16.3	
9.0	43.6	26.6		9.5	48.6	40.6	B	9.5	59.0	2.0		9.5	51.5	57.6		8.2	16.1	57.3	K
9.5	43.6	52.1	B	9.3	58.8	9.8		9.5	51 0.5	22.6		9.4	4 3.0	12.7		9.5	16 14.4	3.8	B
9.5	31 9.5	31.7		8.2	58.8	21.2		9.5	13.1	59.9		9.4	16.3	53.2		9.5	21.5	53.7	
9.2	15.5	51.5		9.0	42 3.2	5.4		9.4	23.9	27.7		9.3	17.2	28.4		9.5	49.0	47.4	
9.0	26.0	17.2	R	7.9	9.4	42.6	K	9.4	39.4	7.9		9.2	20.3	29.5	B	9.5	17 2.6	50.5	
9.3	32 7.9	8.7		9.4	33.2	1.5	B	8.5	52 9.4	42.3		8.7	44.2	44.5		9.0	17.2	23.2	
9.4	26.7	30.0		9.1	37.1	8.4	B	9.5	40.8	9.7		8.7	44.7	49.4		9.0	19.3	53.6	B
9.5	34.0	46.4		9.2	48.0	37.2		9.5	46.2	54.4		9.5	55.6	1.6		8.3	30.9	50.6	K
9.5	34.4	38.4		9.2	58.6	8.0	B	9.5	53 19.6	6.3		9.5	5 1.3	4.3		9.4	51.6	49.6	
9.3	35.7	41.6	B	9.3	43 4.8	58.9		9.4	23.3	58.9		9.5	22.6	8.8		9.5	18 15.0	50.2	
9.5	59.4	13.8		9.2	17.3	34.0		9.2	54 4.1	30.6		9.5	35.3	20.4		9.3	31.5	18.7	
8.0	33 23.2	34.8	L	9.0	19.9	8.8		9.5	15.2	25.1		9.4	47.4	10.9		9.5	58.8	58.3	
9.0	39.0	47.1		9.5	25.4	47.3		9.4	52.4	31.6	B	9.5	55.0	16.9		9.4	19 58.9	13.6	
9.4	43.8	29.9	B	9.5	32.9	47.5		9.5	52.4	30.9		9.5	6 2.9	30.1		9.5	20 15.5	19.1	
9.5	44.7	33.1		9.4	51.3	58.5		9.4	55 11.6	32.2		8.4	15.1	45.1		9.5	20.8	45.4	
9.5	50.2	29.0		9.5	57.9	57.5		9.0	12.7	54.2		9.4	35.1	35.8		9.4	35.3	23.7	
9.5	34 41.8	34.1		9.5	44 1.0	47.1		9.4	15.1	55.4		9.5	39.0	10.3		8.9	21 3.2	24.0	
9.5	44.1	55.8		9.4	22.8	14.0		7.6	29.0	31.9	L	8.1	42.2	58.3	K	8.0	8.1	14.6	K
9.5	58.6	20.1		9.5	33.1	55.2		9.4	29.3	53.6		8.1	42.9	33.7	L	9.4	16.8	54.8	
9.4	35 0.0	25.1	B	9.4	40.5	6.3		9.5	56 2.4	8.5		9.4	7 35.3	2.9		9.1	43.5	26.1	
8.4	12.4	8.3	L	9.5	45 9.1	7.6		9.5	2.5	22.3		9.3	42.6	31.2		9.5	44.6	33.0	
9.5	14.1	36.2		6.1	19.4	42.3	K	9.5	8.1	45.1	B	9.3	43.7	34.9		9.5	22 0.4	12.0	
9.5	27.2	10.3		9.3	22.1	45.3		8.8	8.6	40.3	L	9.5	51.9	53.1		9.5	2.6	40.9	
8.2	38.1	45.6	K	9.5	31.2	34.4		7.5	12.4	13.6	K	9.1	8 14.0	49.9		9.5	4.0	31.5	
9.0	38.5	41.9		9.5	36.5	31.4		7.7	38.2	45.0	K	9.3	16.3	1.7		9.5	28.6	27.5	
9.3	42.8	29.1		9.4	38.8	13.9		9.1	57 3.8	24.3		8.4	17.4	34.1	K	9.3	30.3	22.7	
9.5	36 3.1	36.3	B	9.5	49.8	38.6		9.5	6.4	48.3		9.3	28.5	10.8		9.2	53.4	21.7	
8.6	9.3	14.3	K	9.5	53.7	29.5		9.5	25.9	8.0		9.5	43.0	54.5		6.8	55.1	57.4	L
9.4	23.5	41.3		8.8	56.0	12.2		9.5	59.1	16.6		9.1	44.5	19.7		9.4	23 11.1	56.0	
9.3	44.3	24.0		9.3	46 25.9	57.6		9.3	58 6.0	52.0		9.2	50.7	31.2		9.5	23.3	37.0	B
9.4	47.0	2.0		9.5	26.9	42.0	B	8.7	20.3	43.8	K	9.5	53.2	43.2		9.5	24.4	23.7	
9.4	57.1	55.7		9.5	56.4	39.3		9.3	21.6	21.6		9.3	56.5	16.9		9.5	31.6	58.7	
9.5	37 16.0	47.0		9.3	58.3	33.6		9.1	25.3	33.4		8.9	9 4.9	32.5	K	9.5	32.5	41.0	
9.5	32.3	40.4		9.5	47 0.8	4.5		9.4	40.1	36.4		9.4	11.8	49.4	R	9.2	40.0	3.6	
9.0	34.7	0.6		9.0	25.8	11.8	B	9.0	47.2	57.9		8.1	19.8	23.7	K	9.5	24 13.1	22.5	
9.3	38 8.1	16.4		9.5	26.8	14.7		9.4	52.3	33.9		9.5	10 4.1	3.1		9.5	19.2	14.9	
9.5	16.6	21.1		8.8	33.7	10.7	K	9.5	59 15.0	25.2		9.5	30.6	40.0		8.6	45.9	44.2	K
9.2	21.9	8.0		9.3	48.9	13.2		9.5	18.9	20.3		9.5	40.1	54.5		9.5	47.4	53.8	B
9.1	24.3	0.2		9.0	48 6.0	34.8		9.5	28.8	9.0		9.3	46.7	35.0		9.1	53.0	41.5	
9.2	35.5	12.0		9.4	7.1	6.3		9.4	50.1	26.3		9.5	48.7	33.5	B	9.1	25 19.2	14.8	
9.4	40.0	7.6		7.0	13.2	58.3	B	9.5	56.4	25.4		9.5	52.0	46.7		9.5	22.0	28.0	
8.8	42.3	53.7		9.0	14.0	30.9	B	8.6	0 5.7	50.0	L	9.5	52.5	7.1		9.2	43.9	28.5	
9.5	39 1.7	49.5		5.3	23.7	30.0	L	9.4	17.5	27.5		9.2	56.9	36.8	K	9.3	56.6	41.8	
9.5	4.7	20.6		9.3	28.7	39.6	R	9.2	21.3	53.2		9.5	11 7.5	49.0		9.2	59.1	17.5	
9.2	22.5	36.9		9.3	30.6	30.7	B	9.4	29.2	39.6		9.4	15.0	28.6		9.5	26 4.7	55.3	B
9.2	25.4	32.5		9.4	36.5	22.2		9.1	35.0	7.7		9.5	16.0	18.9		9.5	20.3	56.3	
9.5	37.4	23.6		8.0	50.9	32.4	K	9.5	37.7	59.7		9.5	19.2	15.0		9.2	27.6	41.5	
9.3	43.0	32.0		9.3	53.8	35.0	B	9.3	55.7	46.4		9.5	48.6	17.2		9.2	34.0	22.7	
9.5	43.8	18.9		9.4	49 1.7	39.3		9.2	56.9	56.6		9.5	12 14.7	12.4		9.5	27 18.6	39.6	
9.3	40 0.5	56.8	B	9.4	5.5	7.5		9.2	59.4	48.0	B	9.5	25.2	59.3		9.5	24.1	4.8	
9.3	0.6	21.1		9.5	14.1	6.8		9.5	1 14.6	31.1		9.2	43.2	59.1		9.4	27.2	31.9	
9.3	10.4	18.2	B	9.5	14.6	58.3		9.5	17.3	33.7		9.4	13 15.1	7.2		9.5	33.8	8.4	

4401—4456				4457—4512				4513—4568				4569—4624				4625—4680			
	22ʰ	+27°			22ʰ—23ʰ	+27°			23ʰ	+27°			23ʰ	+27°			23ʰ	+27°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.3	39	8.4	54.4	B	9.4	51	51.3	47.4		9.5	6	13.5	1.8		9.5	25	34.5	54.1		7.5	41	16.6	33.5	K
9.2		26.7	35.1		9.5		56.6	55.9		9.3		15.1	33.2		9.5		55.4	22.1		9.1		22.2	14.8	
9.4		26.9	51.9		9.5	52	10.8	0.7		8.8		42.0	48.0	K	9.0	26	6.8	8.6	K	9.3		39.9	51.0	
9.5		33.8	8.9		9.4		19.9	58.6		9.3		47.4	29.7		9.2		45.0	46.5		9.2	42	50.1	50.1	
8.6	40	2.9	45.3	K	9.3		55.5	2.0		7.0	7	52.5	17.3	K	9.5	27	10.9	13.5		9.3	43	19.7	16.5	
9.5		24.4	35.4		8.8	53	1.0	21.8		9.5	8	1.8	2.4		8.3		14.4	9.7	K	8.8		30.0	4.1	K
8.6		31.0	29.7	R	9.5		1.0	58.6		9.5		10.4	1.8		9.5		16.6	54.5		9.0	44	7.3	58.0	
9.5		46.5	32.2		9.4		10.4	47.5		9.3		16.3	28.3		9.5	28	10.1	50.7		9.5		15.1	38.3	
9.4		47.6	8.2		9.5		35.7	2.5		6.5		42.1	27.9	K	9.5		11.5	32.0		8.3		53.7	45.5	K
9.5		47.7	46.9		9.5		38.0	25.6		9.5		41.8	37.3		9.1		15.2	12.4	L	9.0	45	4.1	53.8	K
9.5	41	0.1	15.4		9.0		41.5	27.3		8.2		58.9	25.1	K	7.3		43.0	3.6	L	9.5		24.2	16.6	
9.5		37.9	55.0		9.5		56.4	32.8		9.3	9	8.8	57.2		9.4		52.4	21.0		9.5	46	7.0	2.0	
8.1		38.1	21.6	K	9.5	54	9.5	10.8		9.3		9.1	31.1		9.5	29	38.8	31.7		9.5		13.4	21.4	
8.5		40.7	57.9	K	9.0		10.9	0.7		8.0	10	12.6	49.9	K	9.0		56.9	33.4	B	9.5		17.5	47.3	
9.2		50.9	39.8	B	8.2		24.5	55.7	K	9.0		30.9	37.6		9.5	30	13.0	55.8		9.1		36.8	39.0	
9.5		50.6	14.9		9.5		43.8	16.7		8.5		44.2	13.9		9.5		20.7	45.9		8.7	47	12.4	3.6	
9.4		57.0	57.4		9.5		47.0	34.9		9.5	12	37.8	16.9		9.3		41.3	41.3		9.5		31.9	26.2	
9.5		57.8	32.1	B	9.5	55	26.9	30.8		8.5		45.6	56.4	B	9.5	31	13.2	57.2		7.0		36.5	50.6	L
9.5	42	19.0	28.1		9.0		27.7	26.6		9.5	13	5.4	5.8		9.5		15.5	8.9		9.5	48	16.8	3.7	
9.5		27.0	15.2		9.5	56	5.6	8.5		8.8		9.3	0.9	K	6.8	32	15.0	26.2	K	9.3		35.5	43.4	
9.4		34.7	50.9		9.5		15.0	54.5		8.7		28.0	39.3	L	9.1		23.2	13.1		9.5		36.7	53.8	
9.5	43	16.1	58.3		9.4		22.7	47.5		8.8		48.1	17.2	K	9.5		31.7	47.6		9.0		38.4	48.2	
9.4		24.7	58.1		9.4		41.1	8.5	B	9.4	14	1.0	26.2		9.5		40.4	10.7		9.0		38.8	26.1	
9.5		39.2	56.9		var		44.9	17.8	K	9.4		15.2	25.5		9.5		53.4	17.6		9.0	49	2.0	53.5	
9.5	44	16.6	24.1		9.5	57	6.2	39.1	B	9.2		15.2	43.0		8.3	33	25.3	5.0	K	9.5		3.2	29.0	
8.7		35.4	13.7	K	9.5		6.7	50.1		6.6		57.5	54.5	K	9.0		55.9	58.7	L	9.1		46.0	45.6	
9.4		46.7	28.5		9.5		11.5	35.1	B	9.5	15	9.0	30.3		9.4	34	9.7	29.6		9.5		50.5	27.5	
9.5	45	18.0	47.8		8.7		15.8	1.8		8.5		15.2	19.7		9.5		11.3	19.1		9.0		51.5	36.9	K
9.4		31.1	32.8		9.0		37.7	41.4		9.0		48.7	14.5	R	9.3		27.3	14.6	B	8.9	50	27.1	33.1	K
9.4		47.3	59.4		9.3	58	4.5	58.4		9.3		55.1	23.3	B	9.2		30.5	51.2		9.5		31.9	58.4	
9.5		56.3	43.8		8.3		6.4	25.9	K	9.3	16	55.2	32.8		9.5		48.3	32.4		8.4		41.5	51.3	L
9.2	46	12.1	35.4		8.8		11.4	33.5	K	8.0	17	2.7	32.8	K	8.6	35	2.7	30.3	L	9.5		56.2	7.1	
9.4		34.4	8.3		9.5		21.3	6.7		9.5		54.9	56.1		8.7		10.8	54.1	K	9.5	52	4.2	16.5	
7.5		54.6	51.5	K	9.5		36.8	33.5		9.5	18	10.8	40.0		9.5		29.9	13.8		8.9		21.2	48.3	
9.2	47	4.2	13.5	B	9.5	59	36.5	36.3		8.6		12.5	23.8	K	9.3		42.7	50.8	K	9.4		59.7	0.3	
7.7		16.8	14.9	K	9.5		57.9	35.6		9.5		13.3	56.3		9.4		44.4	5.4		9.4	53	3.0	2.6	
9.4		17.9	22.8		9.5	0	22.4	16.7		9.5		32.0	50.0		9.2		50.9	1.1	B	8.9		4.0	52.4	L
9.0		26.6	2.9		9.4		27.0	1.6	B	8.5		59.2	59.8	K	8.5	36	27.0	39.6	K	9.4		27.0	26.4	B
9.3		27.0	33.1		9.3		30.5	33.2		9.5	19	14.1	15.6		9.3		31.2	27.2	B	9.0		34.0	4.8	B
9.2		40.8	1.1		9.5		31.4	0.8		9.5		22.3	23.8		9.5		42.2	42.0		7.0	54	10.8	37.5	K
9.4		56.5	2.4		9.5	1	35.6	1.6		9.3		40.2	18.6		9.5		45.5	6.6		9.5		17.5	21.7	
7.4		59.7	14.3	K	9.5		40.0	13.5		9.5		43.1	10.3		9.5	37	8.6	2.0		8.5		53.2	23.1	K
9.5	48	26.9	12.7		9.5	2	1.5	32.9		9.2	20	5.0	2.0		9.3		37.4	10.7		8.0	55	15.7	44.5	L
9.4	49	30.5	41.4		9.0		14.9	48.4		9.5	21	28.0	29.3		9.4		47.3	0.6		9.3		23.8	56.4	
9.2	50	7.4	13.8		8.3		47.6	12.9	K	9.5		38.5	8.2		9.5	38	9.2	43.8		8.1		26.0	26.2	K
9.5		18.1	42.9		9.3		54.0	9.7		9.2		39.6	51.7	K	7.5		30.7	22.7	L	8.4	56	26.7	10.4	K
9.5		21.9	33.8	B	9.2		55.4	46.9	B	9.5		55.2	28.6		9.5		44.8	34.1		9.3		59.4	32.4	
9.3		22.4	11.2		8.9	3	6.6	46.8	B	9.5		59.4	55.2		9.5		54.5	10.3		9.5	57	40.1	47.3	
9.2		24.6	51.7		8.0	4	3.9	46.0	K	9.1	22	55.7	40.7		7.1	39	9.1	53.8	K	8.8		55.4	44.8	K
9.4		33.0	59.1	B	8.3		41.0	10.5		9.5	23	42.2	12.4		9.0		11.8	24.8		7.0	58	35.2	27.6	K
9.1		36.6	11.3	B	9.5	5	3.2	57.5		9.3	24	0.1	18.6		7.0		35.7	37.2	S	9.2	59	0.0	4.2	
9.3		37.5	8.0		9.2		22.1	4.1		9.5		2.4	25.5		9.5		55.5	20.5		7.2		8.7	44.8	K
9.5	51	10.4	22.4		9.0		27.5	30.1		9.2		4.0	8.2		8.0	40	27.7	34.9	K	9.5		27.2	26.5	
9.1		11.2	17.7		9.5		36.0	7.6	B	6.0		18.3	52.1	K	8.7		39.1	48.3	L	9.5		30.1	17.2	
8.9		12.7	41.0		9.1		38.1	48.3	K	9.3		25.8	24.9		9.1		40.5	10.7		9.5		32.9	0.1	
9.5		35.5	13.1		9.5		40.0	19.4		6.3		32.2	35.6	K	9.5		54.3	27.1	B	8.8		56.7	54.0	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	7ᵘ		+28°		7ᵘ		+28°		7ᵘ—8ᵘ		+28°		8ᵘ		+28°		8ᵘ—9ᵘ		+28°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.3	21	3.1	44.6		9.5	35	59.7	53.2	9.5	51	18.2	50.2	8.5	9	35.1	14.2	9.1	35	47.8	48.7	
9.3		4.5	3.3	B	9.4	36	5.3	10.0	9.1		33.9	14.9	8.6		54.4	14.5	7.3	36	45.1	57.8	K
9.1		16.2	10.9	K	1.3		26.4	22.2	K	9.5	52	7.5	33.1	8.3	10	31.6	40.4	9.5	37	6.0	59.4	
9.4		18.6	0.3		9.0		34.7	53.3	9.5		28.6	33.4	8.9	11	9.7	55.3	8.2		13.7	53.4	K
8.0		38.1	12.3	K	9.4		42.2	23.2	9.5		35.4	20.1	9.2		11.4	53.3	7.0		30.0	6.9	K
9.3		47.9	25.1		9.5	37	41.4	14.5	9.3		59.6	40.6	9.4		26.4	13.5	9.3		46.1	42.6	
9.5		50.8	31.6		9.2		44.3	7.7	8.5	53	16.5	34.7	K	9.5	12	11.0	46.1	7.0	38	23.3	41.5	K
9.1	22	5.5	18.5	K	9.3	38	46.5	38.5	9.4	54	5.3	29.7		9.0		15.0	32.5	B	8.4	39	8.7	30.6	K
9.1	23	50.4	57.5	K	9.5	39	18.7	55.4	8.2		17.4	20.1	K	9.3		36.3	26.1		9.5		39.3	38.5	
9.3	24	1.9	32.6		9.5		22.5	33.4	9.3		19.2	13.4		9.5		44.0	22.7		9.0	40	31.8	51.9	
9.3		46.5	31.9		9.5		45.2	0.6	9.3		33.0	14.7		9.5	13	38.1	12.4		9.5		36.5	6.1	
9.4	25	3.2	33.4		9.5		48.7	51.4	5.4		36.3	11.9	K	9.3		40.0	6.5		9.5		56.3	53.4	
9.0		7.8	59.3		9.1		58.7	49.4	9.3		56.5	10.8	B	9.5	14	27.3	33.5		9.0	41	52.0	39.1	
9.5		14.3	4.7		8.0	40	0.7	55.6	K	8.8		57.3	11.4	K	9.5	15	8.2	33.0		9.5	42	6.2	5.4	
7.7		26.0	43.0	K	9.5		12.0	7.9		9.2	55	1.5	25.4		9.3		11.9	26.8		9.5		11.4	38.8	
7.0		27.5	59.7	B	8.2		14.9	49.9	K	9.5		2.8	46.0		9.5		44.5	25.5		9.5		58.7	36.2	
7.7		37.0	48.7	K	9.4		19.4	51.6		9.0		9.4	43.3	B	9.5	16	0.8	55.5		9.0	43	1.6	33.1	
7.8		52.5	34.4	K	9.2		21.6	42.5		9.2		10.3	42.9	B	9.1		10.3	48.9	K	9.5		29.8	11.6	
7.3	26	20.7	56.9	K	9.5		42.1	22.3		9.5		24.4	16.4		8.3		16.6	0.8		6.5		45.5	48.5	P
9.0	27	3.7	56.9	K	9.0		46.6	42.2		9.5		40.1	55.3		8.0	17	15.5	52.8	K	6.0		57.3	52.8	R
9.5		44.6	42.6		9.4		51.7	50.6		8.7		51.6	0.4	K	9.5		24.6	1.1		9.5	44	6.8	9.6	
9.4		50.3	11.7		7.3		57.5	33.1	K	9.4		55.9	13.9		6.0		38.7	21.5	K	9.5		34.0	44.0	
9.5		58.6	38.1		9.5	41	15.3	10.1	B	8.8	56	9.2	51.9	K	8.3		51.0	32.0	K	9.4	45	27.7	16.1	
9.5	28	8.5	32.9		9.5		31.9	56.8		8.8		12.9	44.8		9.3	18	28.9	52.9		9.3		33.5	48.1	
9.4		39.3	6.7		9.5		59.5	13.7		9.1		36.4	39.7		9.5		48.1	18.6		9.0	46	39.8	40.2	
8.2		46.3	3.5	K	9.5	42	6.3	3.3		9.4		36.8	54.4		8.5		50.6	2.3	K	5.5		59.0	28.6	K
9.0	29	24.6	38.0	K	9.5		13.4	56.4		9.5		43.4	27.0		9.5	19	33.4	16.8	B	9.1	50	21.9	10.2	
8.7		29.6	37.5	K	8.7		14.9	11.4		9.4	57	5.5	54.8		8.8		37.8	39.9		9.5	51	12.4	4.9	
9.5		45.5	33.4		9.5		56.7	57.9		9.1		16.2	19.7		9.3		55.3	46.8		9.3		12.4	47.8	B
9.4		56.5	30.9		9.5	43	6.2	10.0		9.2		23.9	38.0		9.4	20	13.8	26.8		9.5	52	2.0	7.9	
9.5	30	0.8	50.9	B	9.4		26.3	5.6		9.0		25.9	17.8	K	9.4		37.9	54.6	B	9.5		45.4	33.7	
9.0		29.7	10.2	K	9.5		26.8	7.6		9.4		45.4	45.5		9.5	21	16.2	18.6		9.3	53	3.4	5.6	
9.5		48.6	26.0	B	9.5		37.6	44.6		9.4	58	7.7	11.0	B	8.7		20.5	33.6	B	9.0		5.1	29.5	K
9.5		50.3	31.7		9.0		58.8	6.9	K	9.2		9.2	15.8	K	9.3		34.7	13.8		6.2		10.4	28.2	K
8.8	31	31.3	3.6	K	9.5	44	2.3	59.8		9.2		26.4	45.7	B	9.3		35.7	47.5		9.5		45.9	3.5	
9.4		45.3	56.7	B	8.4		19.2	16.5	K	8.5		39.2	14.2	K	9.5		45.0	8.1		9.5	54	5.7	52.9	
9.5		47.0	21.6		7.1		22.5	24.9	K	9.4	59	0.4	51.4		9.5	22	10.8	13.8		9.5		18.7	38.7	
8.7		49.2	16.7		9.4		54.0	2.5		9.0		4.4	2.2		9.5	23	5.5	25.7		9.5		19.1	8.3	
9.5		53.5	56.1		9.3	45	16.8	15.4	K	9.3		42.6	56.0		9.5		17.7	23.4	B	9.5		20.5	4.2	
9.0		58.1	43.0		7.3	46	9.6	45.5	K	9.5	0	4.7	28.7		9.1	24	19.4	52.1	K	9.2		28.4	44.6	
9.5	32	4.5	33.1		8.7		32.7	53.7	K	9.5		5.4	56.6		9.5	25	18.7	18.9		9.5	55	15.5	9.9	
9.4		10.9	53.0		8.5	47	2.3	4.5	K	8.7		37.7	36.6	L	9.4		27.1	57.6	B	9.1		23.7	38.8	
9.5		25.6	44.5		9.5		11.6	55.1		9.5	2	19.4	4.9	B	8.9		48.0	42.7	K	6.5		31.4	27.8	K
9.5		46.3	45.2		9.4		19.5	26.0	R	9.5		28.7	53.5		8.5		49.1	56.0	K	8.8		52.3	59.5	
9.4	33	21.5	33.2		9.3		34.7	52.9		9.5	3	3.6	45.5		9.3	26	25.4	41.2	K	9.5	56	9.4	56.4	
9.5		28.5	37.7	B	9.5		54.3	6.5		9.5		5.7	56.6		9.4	27	59.7	29.9		9.5		36.1	37.0	
9.4		32.7	32.2		9.5		55.5	30.1		9.5		7.4	27.2		8.3	28	23.9	53.7	K	9.3	57	14.2	42.2	B
9.5		46.7	52.2		9.5	48	35.2	53.0		9.5		38.2	50.7		6.5		34.8	47.7	K	9.4		32.5	13.3	
9.4		51.5	34.4		9.5		40.8	59.9		8.3	4	38.1	43.4	K	9.0		52.1	53.3	K	9.5		51.4	10.3	
9.4		56.5	21.8		9.5		48.5	27.2		7.5	5	0.9	12.5	K	9.3	29	25.4	18.5	K	9.5	58	32.1	56.7	
9.5	34	2.6	25.5		8.8	49	6.7	33.9		9.0		45.4	12.8		9.4	30	31.3	49.1		8.5		45.4	42.6	K
9.5		16.8	8.3		9.3		14.3	7.7		9.5	6	4.0	57.0		9.4		38.1	7.9		9.4	59	1.5	41.9	
8.8		19.6	40.0		8.7	50	15.2	52.9	K	9.0		26.1	10.4	B	9.5		39.4	13.3		9.3		1.5	3.5	
9.5		20.9	54.5		9.2		21.3	57.3		9.5	7	26.9	5.9		9.5	31	5.4	3.3		8.2		3.7	33.7	K
9.4		42.5	32.4		8.9		23.3	7.7	K	8.5		28.1	49.7	K	9.4		7.0	8.5		9.3		12.0	17.5	
9.5		51.0	56.1		9.5		37.0	29.4		9.4		30.3	30.4		9.5		28.4	51.2		7.8		28.4	8.6	K
9.5		58.3	32.4		9.5		47.1	48.7		9.5	8	4.7	2.0		9.2		30.2	36.4	B	8.3		49.6	6.4	K
9.5	35	5.5	2.5		9.2	51	0.5	26.2		9.4		48.4	13.8		9.4	33	19.5	50.9		8.3		51.4	7.1	K
9.3		40.7	57.9		9.3		6.5	24.7		9.0		54.9	56.8		9.5	34	46.7	50.7		9.5	0	21.0	54.7	
9.5		52.6	39.6		9.4		17.6	44.5		9.5	9	8.9	0.8		8.3	35	40.4	59.1	K	9.1		21.8	0.7	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	9ᵘ	+28°			9ᵘ	+28°			9ᵘ—10ᵘ	+28°			10ᵘ	+28°			10ᵘ—11ᵘ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	0 38.2	6.3		8.7	19 38.7	49.2	K	9.5	48 33.0	58.3		9.2	19 18.2	51.4		9.5	44 37.1	21.9	
9.5	50.0	11.6		9.5	51.6	7.5		8.0	35.8	47.2	K	9.2	18.3	7.8		9.1	38.8	56.4	K
9.3	1 38.0	28.9		8.6	20 35.1	12.0		8.7	50.0	14.9		9.5	29.9	31.9		9.4	48.0	58.0	
9.2	40.1	40.2		8.8	36.5	32.6		6.5	50 9.8	28.3	K	9.4	34.0	39.8		9.4	51.0	2.8	
9.5	53.4	46.1		8.0	21 6.3	1.2	K	9.5	24.1	0.7	B	9.1	39.2	28.7		8.0	52.6	37.4	K
9.5	2 0.3	15.8		9.5	22 17.0	33.7		7.9	51 1.2	12.5	K	8.9	47.9	25.3		8.9	45 28.9	56.3	K
9.0	19.4	27.1		9.5	18.3	0.3		7.8	52 21.6	51.9	K	8.3	21 6.8	14.4	B	9.4	29.5	2.4	R
9.0	54.0	36.3		6.7	49.5	1.9	K	9.2	21.7	56.6		9.0	13.4	36.9		9.4	46 12.2	16.5	
9.5	3 33.1	1.6		9.4	25 48.7	27.5		9.4	53.5	10.3		9.1	44.8	29.0		9.4	17.5	54.1	
9.0	49.4	28.5		9.5	26 21.2	10.3		9.4	53 7.3	53.0		7.3	53.4	36.2	K	9.4	40.2	31.5	
9.1	54.0	15.4		8.2	39.2	34.0	L	9.4	54 38.2	3.9		8.0	22 16.0	4.8	K	9.5	48 1.7	57.4	
9.5	4 6.2	55.0		8.2	39.5	59.3	K	9.5	55 18.5	41.0		9.4	23 22.7	53.6		8.3	26.6	30.2	K
9.5	52.7	9.1		9.0	27 44.4	17.2		9.0	26.9	55.8	K	9.0	27.4	48.3	K	9.3	40.3	41.1	
9.5	53.3	0.6	B	9.0	28 1.3	58.6	K	9.5	48.2	8.9	B	9.4	40.6	11.1		9.5	49 20.8	0.0	
9.5	5 13.0	24.4		9.5	6.5	57.0		7.5	56 16.5	33.2	K	9.4	55.0	51.8	B	9.4	50 35.6	12.0	
9.4	37.9	28.8		9.0	7.7	36.6	B	9.5	57 9.8	54.9		9.5	24 16.2	48.4		9.4	51 14.4	46.6	
9.0	43.0	47.8		9.3	18.2	27.8		9.5	58 1.1	40.0		9.3	19.1	37.0		8.6	34.9	54.0	K
8.4	6 0.8	22.8	B	9.5	18.6	54.8		9.0	12.3	28.0		9.1	46.0	34.9		9.4	41.8	54.9	
9.5	7.7	47.4		8.9	20.9	38.4	K	9.2	40.8	29.7		8.2	25 10.8	32.1	K	9.0	53 5.5	3.0	
9.5	17.0	12.2		7.3	23.7	24.7	K	9.5	51.6	20.3		9.5	26 2.4	13.5		9.5	38.6	6.2	
9.5	51.6	45.3		9.0	25.5	45.8	K	8.5	59 19.2	45.8	K	9.2	7.2	41.8		8.3	54 15.9	38.0	K
7.8	57.1	31.2	K	9.3	28.9	54.6	B	9.5	0 39.5	7.0		6.8	43.2	43.5	K	9.5	38.3	40.9	
8.3	7 16.1	29.1	K	9.3	32.1	6.0	B	9.5	1 9.6	22.1		9.5	27 13.1	51.1	B	8.5	56 43.9	32.9	K
9.5	17.5	55.7		9.5	29 6.4	40.7		8.6	10.9	41.1	K	9.1	13.3	30.4		9.3	50.2	26.4	
9.0	20.0	50.2		7.8	30 1.5	40.0	K	9.4	52.4	56.2		9.2	23.8	43.7	K	9.5	57 36.6	11.5	
9.5	8 30.4	48.5		9.5	5.1	34.3	B	9.5	2 3.2	29.0		9.2	27.6	50.7	B	9.0	44.0	48.1	K
8.8	41.1	30.2		9.5	8.0	0.1		8.4	9.4	54.7	K	8.8	28 4.4	2.3	K	9.1	58 20.7	50.8	K
9.3	9 2.3	54.3	B	9.5	25.4	9.0		9.5	12.8	16.2		8.4	43.2	32.4	K	9.4	59 17.5	8.4	
6.7	3.3	1.7	K	9.5	53.2	53.4		9.2	14.3	3.4		9.5	29 10.7	36.9		9.5	18.2	28.1	
8.9	8.2	5.6	K	9.5	31 4.9	23.9		8.0	3 20.8	33.2	K	9.5	58.4	52.7		9.4	0 57.8	52.8	B
9.4	23.2	7.4		9.5	5.0	59.6		9.1	4 24.5	52.9		9.4	30 31.6	10.3		8.3	1 5.8	46.3	K
8.7	26.0	45.7	K	9.2	35.7	57.2	B	7.0	28.8	57.3	K	9.4	36.9	4.3		9.1	2 2.3	39.1	K
9.3	46.4	10.2		9.0	52.6	53.2		9.4	37.0	14.6		9.3	52.1	34.7	B	9.3	12.0	15.8	
9.1	56.3	6.1		9.4	32 27.2	38.7		9.4	46.7	21.4		8.7	32 12.2	46.5	K	9.3	43.3	28.5	
8.9	10 20.4	52.9	K	9.0	29.3	28.3	K	8.0	56.5	8.4	K	8.8	18.4	46.5	K	9.1	3 14.4	0.8	K
9.5	42.3	59.4		9.5	33 3.8	6.9		9.3	5 14.6	57.8		6.5	19.7	15.9	K	9.5	4 28.0	55.5	
8.8	11 4.4	52.6		8.5	10.5	36.9	L	9.1	6 58.4	7.1		8.0	33 36.9	5.2	K	9.5	6 29.9	6.3	
8.7	11.4	1.8	B	9.5	34 43.9	27.3		9.4	7 39.6	32.4		9.0	41.8	13.8	K	9.4	7 9.7	1.7	
7.9	24.0	54.0	K	9.4	35 22.8	0.2		9.4	41.6	29.4	B	9.5	34 40.2	14.6		6.8	34.3	21.9	S
9.0	31.4	51.3		9.0	28.4	23.1		9.4	42.7	57.3		9.3	50.0	16.3		9.0	53.9	20.6	
9.1	12 41.9	4.3		9.4	36 46.2	44.2		9.5	58.2	5.6		9.5	35 4.3	52.1	B	8.7	8 38.0	11.7	L
9.5	14 13.0	13.3		7.3	47.9	25.7	L	9.0	8 0.5	11.7		9.4	40.7	33.1		9.5	9 13.3	11.5	
9.5	39.7	51.3		9.2	37 20.1	55.1		9.3	19.7	53.3		8.5	54.8	9.4	L	6.5	58.5	9.2	K
9.5	15 19.4	56.8		8.8	50.5	25.9		9.5	9 1.8	56.5		9.5	36 50.3	39.8		9.4	10 17.1	41.2	
8.0	23.0	31.9	K	9.3	38 9.2	11.1		9.1	11.2	47.7	B	8.5	37 40.7	43.5	K	9.3	30.4	44.9	B
8.8	43.7	45.0		9.1	26.2	32.8		7.7	55.1	14.9	K	9.5	38 52.0	11.9		9.1	36.1	39.1	B
9.4	52.4	14.7		9.5	39 21.0	42.1		6.7	10 1.5	8.2	K	9.5	39 5.4	58.1	B	9.5	56.6	39.2	
9.2	57.4	56.3	K	9.5	40 25.1	29.2		9.5	13.5	57.3		9.3	12.2	11.9		9.4	11 13.9	28.4	
9.5	16 10.4	32.3		9.5	25.1	21.6		8.8	39.2	6.6	K	9.5	45.6	19.2		9.3	12 30.7	57.5	B
9.4	49.3	55.1		9.1	41 2.2	44.9	K	8.8	11 45.5	24.3		9.5	41 46.6	27.4		9.5	35.4	14.7	
9.5	17 6.4	11.3		9.5	47.8	13.5		7.8	12 54.1	27.6	K	6.3	55.9	44.9	K	9.3	13 15.3	51.3	
9.2	43.3	40.2		9.5	51.5	51.9		9.3	13 15.4	43.9	B	9.5	42 0.0	2.8		9.5	25.2	20.9	
9.5	18 15.4	23.3		9.1	43 6.4	11.1		9.5	53.0	42.5		8.9	27.5	53.6	K	9.0	26.6	15.4	K
8.5	16.7	15.7	K	8.5	7.8	15.5		9.5	14 4.4	58.6		9.5	44.3	36.3		9.4	27.6	28.4	
9.2	21.3	56.0		7.4	44 7.0	27.1	B	9.4	31.2	36.2		9.1	51.5	17.0		9.5	14 33.0	34.6	
9.1	25.8	47.5		7.3	45 40.2	22.8	K	9.5	16 40.5	22.5		9.5	43 36.3	20.8	B	9.5	16 1.3	12.1	B
9.5	45.7	49.1		9.2	52.1	44.9		9.5	45.2	36.4	B	9.0	46.1	4.6	K	9.5	2.1	46.0	
9.5	59.5	26.1		8.7	46 24.0	2.0	K	9.2	18 3.3	2.3	K	9.3	44 7.0	45 3		9.5	10.4	13.6	
9.5	19 4.3	36.7		9.5	30.0	19.7		8.9	19 8.9	36.3	B	9.4	11.9	50.8		8.4	50.7	0.8	K
9.4	25.4	26.5		9.5	47 42.4	11.5		9.5	15.8	15.9		9.4	28.3	17.4	B	9.5	17 28.2	50.4	

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	11ᵘ	+28°			11ᵘ—12ᵘ	+28°			12ᵘ	+28°			12ᵘ—13ᵘ	+28°			13ᵘ—14ᵘ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	17 31.8	27.7	B	9.5	48 3.1	19.5		9.5	21 45.7	28.4		9.3	58 49.3	12.0	B	8.0	28 3.3	14.7	
8.9	37.6	44.0	K	9.3	49 13.9	52.8		9.2	22 36.2	23.0		8.8	59 33.9	51.1	K	9.3	55.5	40.2	K
9.5	18 46.6	55.2		9.5	50 24.0	12.7		8.9	23 2.3	21.6		9.5	47.2	7.3		9.2	30 1.4	55.7	K
9.4	19 0.8	32.3	B	8.8	51 4.8	4.2		9.5	16.0	20.2		8.4	52.0	59.5	K	7.9	11.2	42.5	K
9.2	48.4	53.0		9.5	31.9	37.8		8.4	51.3	31.9	L	5.1	0 15.1	24.8	K	8.0	31 37.0	1.5	B
9.5	20 18.2	11.3	B	9.2	52 10.7	29.7		9.2	24 38.1	47.4	K	9.5	15.3	5.6		9.5	32 0.8	54.2	
9.5	44.6	31.5		9.5	19.0	11.4	B	9.5	47.5	6.1		6.8	58.5	19.3	K	9.5	5.0	10.0	
8.8	21 54.1	52.6	K	9.0	30.8	55.6	K	8.7	25 15.7	53.7	K	9.5	1 11.0	59.6	B	6.5	33 56.3	49.0	K
9.4	22 5.6	33.2		8.3	53 39.0	47.0	K	8.5	40.2	20.9		8.9	46.8	23.5	K	9.0	57.7	34.6	
9.3	55.5	4.0		9.5	54 32.7	34.2		9.5	55.9	4.4		9.5	2 22.1	36.3		8.8	35 41.5	35.7	
9.4	59.6	33.0		9.5	40.9	0.2		9.1	26 4.5	2.9		9.5	33.6	29.3		8.3	46.8	56.4	K
8.1	23 32.6	20.2	K	9.5	56 12.7	41.2		9.4	12.7	10.9		9.1	4 30.1	21.4	K	8.9	52.9	0.1	K
9.5	24 21.6	11.9		9.2	29.1	54.0	B	8.4	25.7	52.8	K	5.0	5 6.7	37.0	K	8.6	36 19.0	11.6	K
8.8	26 20.2	3.3	L	8.2	40.0	51.9	K	8.5	27 42.6	14.7	K	9.5	11.5	58.2		7.0	37 29.6	18.8	K
9.4	37.1	31.5		9.5	57 34.4	11.1	B	9.5	28 24.0	21.3		9.4	34.3	28.0		9.5	38 5.3	32.5	
8.9	51.6	34.0	L	9.5	58 32.8	58.3		neb	52.0	45.7		8.8	53.4	7.0		9.1	25.9	47.8	K
9.1	52.1	42.5		9.1	44.7	21.6	K	9.5	29 32.1	17.8		9.5	6 20.7	5.4		9.0	26.2	54.8	K
9.3	27 20.2	32.6		9.1	52.0	18.8		9.5	30 21.9	36.5		9.1	29.9	15.5	K	9.5	39 38.7	38.3	B
9.5	28 17.1	11.6		9.3	59 34.5	36.2	B	9.5	32 1.7	13.0		9.4	58.0	36.0		8.2	54.5	40.5	K
9.5	25.1	47.0		9.5	55.3	20.2		9.5	34.0	23.6		9.5	7 40.4	45.7		9.5	59.0	4.9	B
8.2	25.1	42.9	K	9.4	0 21.8	5.6		9.3	59.2	42.6	K	9.4	54.5	10.4	B	9.5	42 1.6	22.3	
6.0	40.6	34.7	S	8.9	1 1.7	47.0		9.5	33 9.3	34.3		9.3	55.4	56.2		6.8	6.8	36.1	K
8.0	29 36.6	34.3	K	9.0	6.5	58.8	K	9.2	35 15.1	45.2	K	9.5	57.0	1.9	B	9.3	21.1	42.2	K
8.1	59.6	13.7	K	5.9	3 25.6	5.8	K	9.5	22.6	13.8		9.5	8 6.9	11.0		9.5	41.6	48.5	
9.5	31 40.0	30.5		9.4	37.8	42.9		8.3	36 52.5	8.2		8.2	9 25.7	30.9	K	8.7	43 5.6	17.5	K
8.8	32 12.7	58.8	K	9.5	4 48.3	25.4	B	7.8	37 13.7	46.9	K	9.2	11 0.6	26.4	K	9.0	50.1	14.1	K
9.1	34.6	41.9	K	7.8	5 4.9	10.3	K	9.3	18.3	0.4	K	8.5	4.6	12.3	K	9.5	44 51.2	50.4	
9.3	33 15.3	1.5		9.4	8.7	1.2		7.5	57.1	11.7	K	8.8	6.2	49.5	K	9.5	57.8	6.6	
7.9	54.7	25.7	K	8.5	31.2	23.0	K	8.3	57.5	33.1	L	8.7	11.7	54.5	K	8.5	46 17.1	54.8	K
9.5	34 34.2	25.0		9.5	6 57.8	40.5	B	8.8	38 1.9	7.7	K	8.9	54.7	55.2	K	9.4	22.6	5.4	B
9.5	43.4	14.7		9.2	59.2	37.3	K	9.0	40 32.4	12.6	L	9.1	55.2	53.2	K	9.1	24.1	49.8	K
8.8	35 9.9	4.0	K	9.4	7 22.0	41.8		7.9	41 21.9	36.0	K	9.0	12 10.8	23.3	K	8.5	25.3	32.9	K
7.3	47.4	51.2	K	9.5	46.2	14.1		6.2	42 15.8	20.4	L	7.9	13 3.3	51.6	K	8.5	27.6	21.6	K
8.0	53.6	21.7	K	9.1	8 20.0	42.7	K	8.9	44 11.2	6.7		9.1	31.7	27.8	K	8.0	53.6	13.0	L
9.5	36 46.8	8.2		8.1	43.7	51.5	K	8.3	23.4	1.9	K	9.3	52.1	43.9	K	9.5	47 9.6	40.9	
9.2	37 23.1	26.6		9.1	9 16.6	27.5	K	5.0	41.4	20.0	K	9.3	14 7.5	0.2		9.5	59.6	1.7	
8.0	24.0	12.5	K	8.2	37.9	32.6	K	9.1	51.8	54.8		9.5	10.0	42.9		9.4	49 27.5	55.9	
9.1	39.7	55.0	K	9.4	49.2	33.2		8.9	45 1.9	54.4	L	9.1	40.2	52.8	K	5.0	56.6	13.0	K
7.3	51.3	1.3	L	9.5	10 49.7	59.5		9.1	57.9	36.6	K	9.5	45.0	0.9		9.3	51 29.2	56.1	K
9.5	38 38.4	1.7		7.5	53.5	7.3	K	9.5	46 34.6	25.2		9.4	15 4.6	23.3		9.2	50.5	56.5	K
9.4	39 22.1	48.0		9.5	55.6	19.5	B	9.4	54.8	55.9	B	8.9	49.6	39.7	B	9.5	52 6.9	57.0	
8.9	37.4	59.7	K	9.5	11 37.7	39.5		9.5	47 2.7	6.0		9.5	57.7	31.2		9.2	28.5	59.5	K
9.2	44.6	15.6	L	9.0	45.0	51.4	K	8.8	3.6	27.3	K	9.4	58.0	45.4		9.5	53 1.6	29.5	
8.5	48.5	13.2	L	9.5	53.7	17.1		9.5	8.1	40.7		8.3	18 18.5	44.9	K	9.0	22.8	52.2	
9.3	40 22.6	48.4		9.3	12 3.2	44.1		9.3	48.4	41.5	K	9.5	41.2	54.4		9.5	23.5	58.0	
7.5	24.5	7.9	K	6.5	14.1	57.8	K	8.9	56.5	47.2	K	8.9	19 37.3	57.8	K	9.4	36.6	47.7	
9.3	27.3	12.3	B	9.3	46.6	42.3	K	8.0	48 7.4	32.8	K	9.5	53.4	19.4		6.3	54 36.8	5.7	K
7.2	41 39.8	55.9	K	9.5	14 35.0	56.9		9.5	49 9.2	53.9		8.2	21 38.6	5.9	K	9.3	55 18.1	24.7	K
9.5	42 39.6	26.3		8.5	39.5	6.3		9.1	49.1	34.9	K	9.5	57.3	39.8		9.0	56 39.6	41.5	K
7.7	43 12.4	53.8	K	9.5	15 17.7	24.7		7.5	51 44.9	15.2	K	9.5	23 1.2	8.6		9.0	44.7	30.5	K
9.4	24.8	1.0	B	9.2	17 9.6	15.4	K	7.3	52 34.6	52.2	K	8.5	1.7	25.1	K	7.5	53.6	11.3	K
8.3	45 15.2	59.7	K	9.5	35.3	13.0		9.5	53 6.8	0.5		8.6	36.7	24.4	K	8.0	59 53.5	26.0	K
9.5	30.6	49.3		9.5	59.2	27.5		9.5	54 11.6	14.8		9.5	24 1.5	42.5	B	9.5	2 47.3	54.9	
9.5	40.0	19.8		9.3	19 5.7	12.2	K	9.5	51.5	7.2		9.3	22.0	26.7		8.0	3 55.1	18.5	K
9.1	46.6	5.1	L	5.1	10.2	4.9	K	9.5	55 9.0	35.5		9.1	47.2	0.6		9.5	4 9.8	10.2	
9.0	48.6	11.3	K	7.8	20 18.6	54.7	K	9.2	56 38.6	22.5	L	9.0	25 57.0	42.9		9.1	40.6	40.8	K
9.5	46 28.3	52.6		9.3	33.2	23.6		9.5	40.5	53.9		8.3	26 46.3	5.9	K	8.1	5 4.6	42.2	K
8.7	31.4	45.9	K	8.2	34.1	12.9	K	9.3	57 10.4	30.1		8.7	58.4	10.6	K	9.5	21.9	2.5	
9.5	47 9.2	59.[illegible]		9.5	21 6.2	50.7		8.6	19.0	53.4	K	9.4	27 3.7	55.0		9.2	37.5	2.7	
9.5	20.9	1.2	B	9.5	44.3	40.8		9.5	58 29.1	40.4		9.5	11.6	36.7		9.2	56.6	43.9	K

2601—2660					2661—2720					2721—2780					2781—2840					2841—2900				
	16ᵘ		+28°			16ᵘ—17ᵘ		+28°			17ᵘ		+28°			17ᵘ		+28°			17ᵘ		+28°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.1	35	18.0	12.5		7.3	59	0.5	18.2	K	9.1	13	28.4	53.5	K	9.5	29	18.2	33.3		9.5	43	6.1	40.1	
9.5	37	6.0	23.8		8.1		4.4	53.0	L	7.1		40.3	10.4	K	9.4		25.3	37.9		9.5		6.7	20.9	
9.5	38	1.7	7.2	B	9.5		23.8	10.5		9.0		55.2	13.3	K	9.4		26.2	24.2		9.5	44	14.3	19.8	
9.5		11.5	34.1		9.4		27.7	31.3		8.5	14	16.0	37.0	L	9.5		37.4	46.9		9.0		19.3	30.1	
8.7		14.5	29.7	K	8.6		44.6	16.9	L	9.5		51.7	18.5		9.5		56.3	58.6		8.2		33.8	17.0	L
9.5		43.1	0.9		9.5	0	0.0	47.8		9.2	15	11.7	28.7		9.3	30	14.0	23.0		9.5	45	14.7	13.8	
7.2	39	18.7	38.4	K	9.5		9.3	26.6		9.5		45.4	37.2		6.3		26.3	16.1	K	9.5		15.7	9.2	B
9.3	40	31.6	19.2		9.4		18.9	58.4		6.5		51.1	53.9	L	9.1		28.0	43 2		9.5		20.7	29.5	
9.4		48.6	58.2		9.1		40.5	56.6		9.5	16	10.4	50.5		9.4		53.5	14.3		9.0		32.6	21.1	K
9.1	41	11.9	42.6	K	9.0	1	9.1	58.3		9.1	17	12.3	57.7		9.5	31	20.2	31.2		9.5		33.6	36.6	
9.1		23.6	59.7	K	8.0		43.7	19.7	K	9.0		38.3	10.2	K	9.3		34.9	7.8		9.4		47.0	21.5	
9.4		33.3	59.3		9.0		45.8	14.3	K	9.4		54.4	10.0		9.5		51.0	55.6		8.5	46	3.5	16.9	K
8.2		39.3	38.8	K	9.5		54.4	46.7		9.5	18	13.0	18.4		9.5	32	18.3	52.7		9.5		34.4	38.3	
8.2	42	18.9	8.9	K	9.3		56.4	32.6		9.5		16.3	19.1		9.4		18.5	47.1		9.5		51.0	28.9	
9.5	43	46.6	47.4		9.3	2	6.4	57.1		9.4		36.9	16.7		9.5		30.7	10.1		9.4	47	2.4	54.0	B
8.7		51.9	35.0	K	9.0		37.8	13.7	K	9.5		48.7	35.5		9.3	33	22.3	19.5		9.5		3.2	59.9	
9.5		58.1	14.8		7.0		38.0	26.7	K	8.5	19	37.3	16.8		9.4		36.7	2.0		9.3		16.7	5.4	
7.8		58.7	39.1	K	9.0		45.6	54.2	K	8.2		56.2	31.2		9.5	34	8.2	35.9		8.6		29.1	37.4	
9.1	44	28.5	48.2	K	9.4	3	22.7	23.1		9.5	20	7.8	47.9		9.5		38.3	45.4		9.4		41.1	24.6	B
8.9		37.9	6.5		9.5	4	0.3	35.9		9.5		22.9	21.0		9.0		46.0	16.3	K	9.3		56.5	29.4	
9.5		58.0	15.2		9.5		35.1	43.8		8.8		47.2	49.3		9.5		54.2	15.8		9.2	48	6.8	58.8	
8.8	45	39.4	46.3	K	9.5		39.9	37.2		9.0		59.8	56.5		9.2	35	44.0	25.8		9.5		53.4	21.3	
7.0		41.0	22.2	K	9.5		53.6	35.2		9.3	21	23.0	27.0		7.9		53.9	17.3	B	9.5	49	8.9	53.6	
6.8	46	6.0	55.1	S	9.4	5	26.3	52.4	B	9.4		26.7	59.0		9.5		56.9	59.4		9.4	50	1.9	22.5	
9.1		12.1	0.4	K	9.5		54.1	49.7		8.2		39.2	42.3	B	9.4	36	21.9	45.6		9.5		24.0	10.0	
9.0		28.3	45.8	L	9.3		56.2	4.2		9.2		58.5	9.7		9.5		22.8	25.3		9.4		33.1	29.1	
9.5		49.9	45.5		9.3		58.7	23.3		9.4	22	0.1	32.1		9.4		42.9	1.0		9.5		43.6	21.8	
9.4	47	9.4	22.1		9.5	6	15.2	47.0		9.0		26.3	35.0		9.3		45.2	36.4		9.5		48.7	13.2	
9.0		10.6	29.1	K	9.5		38.5	31.7		8.7		45.8	26.7		9.5	37	38.1	5.5		9.5	51	21.4	31.7	B
9.4		29.2	7.5		9.0		42.1	9.7		9.4		52.5	33.2		9.5		38.2	14.5		9.4		24.1	1.2	
9.5		45.9	24.9		9.5		42.4	11.7		9.3		52.9	0.1	B	8.9		55.7	43.8		9.3		31.9	47.1	
9.5	48	57.4	11.1		8.9	7	0.2	26.4		9.5	23	0.2	15.6		9.5	38	17.2	52.1		8.5		52.3	1.0	K
7.4	49	9.3	22.3	B	8.7		4.3	46.0	L	9.4		1.9	0.6		9.5		18.2	15.3		8.3	52	2.4	15.9	L
8.5		15.0	51.7		8.1		24.0	7.0	K	9.5		7.5	23.0		9.0		27.1	59.9	K	8.9		19.9	21.1	
9.4		20.7	45.2	B	9.0		40.0	54.9	K	9.5		8.8	58.8		9.5	39	12.5	42.9		9.1		38.8	55.0	
9.5	50	0.4	3.3		9.4		46.9	52.6		9.5		32.9	21.1		8.7		15.5	4.0	K	9.5	53	5.3	41.5	
8.9		49.6	41.5		8.7	8	13.0	58.8	K	8.4		33.6	55.8		9.1		30.2	1.4		9.5		30.6	58.3	
9.2		56 8	5.9		9.5		18.5	2.7		9.5		35.0	23.2		9.2		33.0	9.7		8.2		32.3	15.8	K
8.8	51	6.7	32.8	L	9.4		20.5	19.8	B	9.2		46.1	27.4	B	9.5		37.5	18.8		9.2		33.9	49.3	K
9.5		8.4	8.5		8.9		32.0	9.8	K	9.5		52.2	59.9		8.9		43.0	38.2		9.5		40.4	28.2	
9.5	52	1.9	20.7		9.5		32.9	13.6		9.5	24	1.2	6.0		9.5		46.4	25.5		8.7		54.8	8.7	L
8.4		35.0	27.1	K	8.4		58.0	8.3	K	9.2		3.0	30.4		8.3	40	0.7	18.3		7.5	54	36.7	44.6	K
9.3		47.2	24.4	K	9.1	9	37.5	59.2	K	9.1		32.2	15.1	K	8.8		7.0	36.4		9.2		48.9	28.3	
9.5	53	43.1	53.1		9.5		44.2	48.2		9.4	25	20.1	22.0		8.5		17.2	14.3		9.5		52.7	3.7	
9.2	54	2.8	1.3		9.5		44.4	18.2		9.5		26.2	47.0		9.5		18.7	26.4		9.5		56.5	30.1	
9.5		31.5	47.7		9.5	10	25.0	26.1		8.4		28.0	14.4	K	9.5		22.3	21.2		8.6	55	14.8	32.2	L
9.5		59.6	45.8		9.5		38.4	35.1	B	5.7	26	7.7	30.3	K	8.9		43.8	14.1		9.5		27.0	56.2	
9.0	55	3.2	58.9		8.4		47.7	34.5	K	9.3		16.1	58.7	B	9.5		45.3	35.4		9.5		58.5	4.0	
9.1		21.4	5.2		9.1	11	17.0	5.1	K	9.5		29.5	4.8		8.7		59.1	2.3		9.2	56	2.3	49.1	K
9.3	56	7.0	53.8		9.2		34.8	50.3	B	9.4		34.0	21.3		8.0	41	12.0	8.5	L	9.5		3.2	28.6	
9.4		34.6	54.8	B	9.5		38.2	47.5		8.0		42.3	54.3	K	7.5		35.7	58.8	L	9.5		9.9	0.2	
9.5		36.2	58.6		9.2		49.3	14.9		9.4		57.7	33.7	B	9.2		39.0	52.6		9.1		30.3	17.3	
9.4		40.3	4.6		8.0	12	6.9	53.4	K	9.5	27	14.7	21.3		9.5		53.4	34.6		9.5		45.7	14.8	
9.3	57	12.7	32.3		9.2		7.2	54.4	B	9.5		21.9	35.7		9.2	42	3.9	24.9	K	9.5		57.6	54.5	
9.4		14.5	1.8		9.5		8.3	44.8		9.5		23.2	20.8		8.2		7.5	49.7	L	8.8	57	1.5	26.8	
9.3		17.0	11.0		9.4		12.0	21.0		8.4		24.0	52.3	K	9.5		9.1	7.2		9.5		6.0	45.5	
8.6		32.2	4.2	K	9.2		38.0	4.6		9.1		29.0	47.8	K	8.5		11.8	40.5	L	9.4		12.4	37.2	
9.5	58	18.5	51.6		8.2		52.8	23.3		9.1		49.7	52.6	K	9.5		12.7	38.4		9.3		13.7	33.4	
9.4		28.2	19.2		5.8	13	8.6	58.0	L	7.8	28	51.0	19.0	K	9.3		16.9	27.8	K	9.5		18.7	8.2	B
9.4		37.9	4.0		8.7		8.7	33.7		8.8		54.7	6.2	K	9.5	43	4.0	11.1		9.5		19.3	22.5	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ᵘ—18ᵘ	+28°			18ᵘ	+28°			18ᵘ	+28°			18ᵘ	+28°			18ᵘ—19ᵘ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	57 19.9	29.8		9.5	8 56.6	48.7		7.3	28 26.4	10.3	L	8.1	41 39.0	49.8	R	9.3	53 45.9	29.6	B
9.5	20.2	4.7		9.5	59.0	58.0		9.3	26.7	32.7		9.2	39.5	34.0		9.5	46.4	56.3	
9.5	37.2	0.7		9.2	9 30.3	37.9		9.5	41.3	50.5		9.4	46.9	52.0		9.2	56.0	13.8	K
9.5	38.2	7.5		9.5	32.6	43.7		7.6	48.0	38.3	S	8.3	57.0	53.0	K	9.5	57.2	38.8	
9.0	58 3.9	32.8		9.5	40.6	26.9		9.4	59.3	57.7		8.3	42 2.3	33.8	B	9.3	59.0	21.0	K
9.4	5.5	46.6		9.2	43.1	48.3		9.4	29 16.2	48.1		7.6	3.4	29.0	R	8.1	54 31.9	51.5	B
9.5	11.3	21.7		9.3	52.7	21.7		9.3	20.7	36.9	B	8.3	20.6	53.0	K	7.7	33.4	28.7	K
9.5	26.4	24.5		9.5	10 8.9	14.5		9.5	36.7	42.5		9.3	38.6	39.9	B	8.4	33.5	55.8	
9.1	37.7	35.3	K	9.5	12.1	54.4		9.5	30 16.5	48.8		9.4	50.3	35.9		9.5	53.3	32.2	
9.5	59 2.3	20.4		9.2	23.6	13.6		9.3	31 20.9	46.5		9.2	43 9.5	12.4		9.4	55 2.9	21.7	
9.5	19.6	16.3		8.1	33.2	7.7	B	9.0	24.4	13.8		8.7	22.4	41.4	K	9.1	7.6	43.9	K
9.4	31.3	45.1		9.1	51.3	45.2		8.0	34.9	55.6	K	9.5	27.0	23.9		9.4	28.3	53.5	
9.3	34.3	13.1		9.3	11 35.0	20.0		9.2	42.0	3.4	K	8.4	54.0	3.3	B	7.0	33.6	12.5	B
7.8	47.4	41.0	K	9.2	36.9	6.0	B	9.5	47.8	59.9		9.1	58.7	14.5		9.3	58.7	10.8	
9.4	51.0	10.5		9.5	12 13.1	55.4		9.3	32 0.3	31.8	K	8.9	44 11.3	18.9	L	9.1	56 1.5	1.9	
9.5	0 3.7	16.7		9.1	26.7	38.5	K	9.5	10.4	14.2		9.4	19.0	3.9		9.2	6.4	47.1	K
9.3	29.3	48.9	K	9.5	47.5	55.9		7.0	18.5	30.3	B	9.5	26.8	29.2		9.5	7.2	31.5	
9.5	39.0	57.4		9.1	13 45.0	11.7		8.3	37.1	11.0		9.0	45.7	43.6		9.5	15.5	22.4	
9.4	41.5	42.2		8.8	54.9	45.8		8.2	37.7	49.2	K	8.0	54.5	21.6	L	9.5	29.4	7.5	
9.5	1 15.4	8.3		7.0	14 47.8	55.3	K	8.0	40.7	34.1	K	9.4	59.6	7.5		8.5	32.3	0.4	L
9.5	15.9	14.8		4.9	15 21.7	48.3	B	9.5	42 9	56.5		9.3	45 10.5	23.9		9.5	47.5	7.2	
8.5	22.0	22.2	K	8.5	27.4	16.8	S	9.5	51.0	26.8		9.4	12.0	45.0		9.4	57 0.2	7.7	B
9.0	32.3	38.5		8.3	41.7	40.4	K	9.5	33 2.8	52.6		9.5	34.4	13.0		9.5	1.8	26.4	
9.2	37.2	26.0		9.5	16 35.7	54.3	B	9.5	11.5	39.9		6.5	53.8	36.5	K	9.2	5.9	13.6	
3.9	54.2	44.4	K	9.1	50.6	3.0		9.1	17.1	43.7	K	9.5	46 9.1	38.7		9.5	14.0	28.7	
8.9	55.1	8.6		9.5	17 12.8	57.3		9.3	20.4	59.6	K	8.2	19.1	56.1	K	8.8	23.1	12.2	
9.2	59.6	52.0		9.5	53.3	26.9		9.5	28.2	28.6		9.1	27.0	3.8		9.1	35.6	26.3	
8.8	2 10.9	26.5		9.5	18 0.0	4.5		9.5	57.4	41.6		9.5	46.3	10.4		9.5	40.9	11.6	
8.7	17.0	38.7	K	9.3	2.9	3.7	B	9.3	34 5.5	52.7	B	9.4	54.8	20.3		9.2	41.5	22.5	
9.5	3 2.6	56.9		9.5	3.0	57.8		9.4	41.4	37.2	B	9.5	47 7.8	48.7		9.5	43.4	47.2	
9.5	36.6	33.8		9.5	10.0	9.4		9.4	47.7	8.6		9.2	26.3	39.3		9.4	58 2.2	30.2	
9.4	37.8	10.2		9.1	28.0	13.8	B	8.2	35 30.3	21.9	B	8.9	52.7	42.3		9.0	11.3	43.8	
9.2	43.9	6.5		8.9	29.7	12.9	B	9.0	37.4	9.6	K	9.5	48 6.8	5.5		9.5	22.0	54.3	
9.3	4 24.7	53.6		9.3	46.1	11.6		8.8	40.5	6.7		9.5	19.0	34.8		8.8	36.0	26.5	
9.0	37.9	25.1	K	9.4	19 27.4	53.3		9.3	46.4	40.9	B	9.5	27.4	29.4		9.4	40.0	9.2	
9.3	5 7.3	3.5		8.0	37.3	0.3	K	9.1	54.6	35.9	B	9.1	31.1	44.7	K	9.2	49.4	49.2	
9.4	34.5	48.3		9.5	52.9	45.1		9.4	56.7	32.2		9.4	47.3	58.0		9.5	59 0.6	13.1	
9.2	53.1	21.9		9.5	20 0.0	37.2		9.5	36 23.3	53.2		9.5	49 14.4	31.3		9.2	10.7	15.6	
8.6	55.1	17.2	B	9.5	18.2	46.5		9.2	24.4	49.3	B	9.5	59.7	1.8		9.4	12.5	9.2	
9.4	56.2	40.2		8.2	37.7	6.2	L	9.5	30.4	47.0		9.3	50 17.6	12.3		9.0	18.4	51.4	B
9.0	57.7	51.8	B	9.0	21 33.8	10.0		9.4	57.7	20.6		9.5	23.5	10.3		9.2	19.1	20.0	
9.2	6 0.2	38.7	B	8.6	37.1	50.7	K	9.5	37 6.5	59.0		9.5	46.5	24.8		9.5	31.0	53.8	
9.2	9.5	12.7		9.1	22 13.0	39.9		7.3	8.6	9.9	K	9.5	47.2	16.9		9.5	33.6	23.9	
9.2	14.0	28.8	B	9.0	24.9	30.6	K	8.0	13.3	30.5	B	9.4	49.4	8.5		9.3	50.8	29.9	
9.4	21.0	13.4		9.1	45.2	53.1	K	8.9	20.8	3.7	K	7.0	53.0	0.9	L	9.5	0 9.4	12.2	
9.4	23.7	41.3	B	9.2	23 2.5	42.0		8.4	28.4	47.7	K	9.0	51 1.2	6.7		8.0	10.0	53.4	K
9.4	43.7	31.6		9.2	3.2	45.0		9.2	38 10.6	58.8	K	9.5	17.4	37.5		7.7	11.0	35.9	L
9.4	44.4	26.1		9.0	21.7	50.0	K	9.5	20.0	48.8		9.3	27.5	54.6		9.1	26.7	7.5	
9.4	46.4	47.1		8.8	40.3	57.7	K	9.5	43.1	31.2		9.5	28.6	20.6		8.6	31.1	20.3	B
9.5	47.6	36.5		9.5	59.4	7.5		9.5	39 28.9	30.6		9.5	48.3	5.1		9.4	35.2	38.6	
9.3	53.2	28.6	B	9.0	24 3.2	22.7		9.4	29.7	42.6		9.0	52.1	9.9		9.5	43.7	37.6	
9.2	7 1.2	3.9		9.5	3.8	33.4		9.2	42.7	32.7		9.5	56.2	20.6		9.0	44.0	29.9	
9.5	6.6	26.1		7.5	25 24.6	24.4	L	8.1	48.0	6.8	S	9.5	52 15.9	57.3		5.7	52.6	23.8	K
9.1	12.8	1.1	K	9.3	26 0.4	10.7	K	9.1	40 15.9	19.6		9.4	24.2	20.4	B	9.4	54.9	3.3	B
8.2	17.7	13.1	B	9.5	10.0	39.6		9.0	20.6	11.0		9.2	24.5	26.4		9.5	55.5	10.0	
8.2	20.6	12.4	K	8.5	15.2	46.3	K	9.0	35.0	1.9	K	9.1	28.0	46.9		9.3	1 4.2	41.6	
9.5	26.5	22.0		9.5	49.2	57.5		9.1	45.4	9.4	K	9.2	33.9	56.3		9.4	12.1	41.1	
9.5	8 8.4	56.8		8.9	51.7	17.5	K	8.5	41 32.0	16.3	K	9.5	52.7	15.3		8.6	15.0	58.6	K
9.4	15.4	50.0	B	9.0	27 30.4	19.9		9.2	33.0	14.8	K	9.4	55.0	52.3		9.5	31.3	51.0	
6.8	27.1	11.0	K	9.1	51.9	56.5	K	9.5	35.4	25.0		9.3	53 17.4	37.0		9.5	31.9	17.9	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	19ᵘ	+28°			19ᵘ	+28°			19ᵘ	+28°			19ᵘ	+28°			19ᵘ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	1 36.7	20.6		8.8	9 54.7	42.7		9.2	19 1.0	39.8		9.5	27 29.0	57.3		9.4	36 30.3	10.1	B
9.2	51.1	23.1		8.7	58.2	18.2		9.0	2.0	39.3	B	9.4	42.9	10.3		9.4	37.0	30.1	
9.2	57.6	7.1		9.2	10 1.9	44.3		9.5	12.3	22.0		9.5	48.1	7.4		9.4	41.0	32.6	
8.7	2 10.1	9.2	K	8.9	5.0	26.3		9.5	13.7	18.8		9.5	48.8	12.2		9.4	41.9	29.4	
9.5	16.0	8.9		9.5	13.5	3.2		9.5	29.5	7.1		9.3	52.4	57.7		8.4	44.6	0.0	K
9.5	22.8	57.8		9.5	14.3	52.0		9.4	46.9	38.6		9.2	53.6	43.4		9.5	56.3	36.9	
9.2	26.2	9.9	B	9.2	22.1	7.5		9.4	53.8	38.6		9.2	57.7	28.9		7.2	37 1.0	59.3	K
8.9	43.0	52.9		8.1	24.3	1.5	S	8.0	20 1.4	28.7	S	9.5	28 9.4	47.2		9.3	8.7	1.3	
9.3	53.5	50.4		9.4	24.4	44.4		9.3	6.1	0.4	K	9.4	11.9	36.8	B	8.8	14.5	33.1	
8.5	3 0.0	10.9	K	9.5	41.0	7.3		9.4	8.8	12.9		9.5	14.3	42.5		9.3	38.3	18.8	
9.0	10.0	32.5	K	9.4	49.5	27.8		8.3	19.4	21.3	L	9.4	17.9	12.4		9.3	42.0	54.4	
9.5	12.8	17.7		9.1	55.8	36.8		9.2	27.0	10.2	K	8.1	21.6	6.1	K	9.5	38 1.1	50.9	
9.5	30.7	1.8		9.1	11 13.0	2.9		9.2	28.1	7.5		9.1	23.0	18.9		9.4	10.8	45.8	
9.5	32.9	47.9		9.3	14.9	6.3		9.5	33.3	25.7		9.0	34.5	19.2		9.4	23.9	2.5	
9.2	34.6	41.0	K	8.2	31.1	31.7	K	9.2	21 0.4	56.8		9.3	38.9	45.0		9.5	24.9	31.3	
9.2	40.3	32.6		9.3	43.2	43.8		9.3	4.5	28.3	B	9.5	40.0	53.4		9.5	34.2	43.1	
9.5	42.4	13.8		9.3	12 18.6	17.9		9.5	4.7	46.0		8.8	48.7	59.3	R	9.1	35.1	46.1	K
9.5	4 9.5	43.7		9.5	22.2	35.4		9.3	22.0	54.6		9.0	52.8	35.3		9.5	48.4	19.3	
9.0	12.0	15.8		9.3	25.5	3.6		8.8	25.1	46.4		8.2	54.0	50.4	K	9.5	49.5	28.7	
9.5	16.7	30.4		9.4	44.1	11.7		9.4	27.1	11.7		9.5	29 0.8	6.5		6.8	39 1.0	54.9	K
9.2	24.9	52.9		9.5	58.2	8.2		9.0	32.9	38.6		9.2	11.0	54.3	K	9.3	5.9	16.7	B
8.8	32.7	7.7		9.0	13 5.0	38.6		8.8	45.0	44.5		8.8	13.6	45.9	K	9.5	22.2	38.8	
8.9	33.1	5.6		9.4	8.9	18.1		9.0	47.3	15.7	B	9.5	17.2	52.8		9.5	28.4	44.7	
9.5	42.8	57.1		9.3	13.6	8.0		9.0	22 0.6	7.2		8.7	23.1	24.3		9.4	32.9	19.2	
8.6	49.9	6.5		9.4	24.5	31.3	B	9.2	4.5	23.5		9.3	35.9	20.0		9.4	41.0	13.5	
9.5	55.0	44.8		9.3	36.0	49.5		9.5	6.3	7.6		9.4	30 4.6	39.4	B	9.4	52.3	7.3	B
8.2	5 18.0	13.7	L	9.5	38.4	34.8		9.0	18.0	27.7		9.5	5.1	3.5		9.1	40 3.3	48.7	
9.5	26.4	57.7		9.2	44.8	18.4	K	9.1	25.4	39.3		9.5	16.5	29.0		9.3	4.2	37.6	
9.5	28.4	57.3	B	9.5	58.0	45.8		9.3	35.2	45.4	B	9.5	28.6	11.5		9.2	14.5	50.7	B
9.5	29.3	55.8		9.4	14 5.7	2.2		9.5	38.2	29.2		9.4	49.4	59.7		9.3	21.1	55.8	
9.4	30.3	56.3		9.4	8.1	6.4		9.5	39.6	46.6	B	9.4	31 5.2	22.9		9.5	28.2	43.5	
9.5	52.1	27.5		8.9	10.5	56.3	B	8.7	46.0	11.2		7.1	23.1	10.9	K	8.7	29.5	33.3	K
9.5	52.7	21.3		8.1	11.5	18.1	K	8.8	55.9	31.9		9.0	23.5	28.4		8.7	32.2	17.2	L
9.5	6 15.8	19.1		8.4	12.7	13.7	K	9.4	23 6.0	6.4		9.5	30.6	32.6		9.5	37.0	5.4	
9.5	41.0	8.8		8.9	18.8	32.5		9.3	20.1	16.8		9.3	38.4	48.4		9.3	47.4	37.3	
9.1	59.1	21.4	K	9.2	21.5	57.6		9.3	21.2	29.7		8.7	43.7	11.9	K	9.1	41 1.1	7.8	
8.9	7 5.0	13.4		9.5	25.7	31.0		9.2	21.4	43.5		9.2	51.4	43.3		9.5	35.9	16.5	
9.2	8.5	19.7	B	9.5	44.8	53.4		9.4	27.2	58.8		9.5	32 19.2	28.2		8.3	36.5	7.6	K
9.4	10.4	35.6		9.0	15 16.6	29.7		9.2	41.5	43.0		9.4	26.5	53.6		9.5	44.3	34.1	
7.0	13.7	58.8	L	9.5	26.3	42.5		9.5	47.3	22.7		9.3	55.6	5.7		8.7	42 3.1	48.5	K
9.4	18.8	23.0		9.5	44.3	37.4		9.3	54.0	44.4		9.3	58.3	13.0	B	9.4	7.0	3.6	
9.5	18.9	53.4		9.4	55.7	22.2		9.3	24 1.4	54.5		9.5	59.0	43.9		9.5	16.3	2.3	
9.5	43.1	50.9	B	9.5	16 1.1	31.3	B	8.2	5.6	25.8	K	9.3	33 32.5	6.5		9.5	55.9	49.9	
9.5	45.0	43.4		9.5	20.2	23.8		9.3	23.0	33.7	K	8.8	33.5	58.6		9.4	43 2.5	42.7	
8.4	48.8	50.6	K	9.5	23.3	32.4		9.5	41.6	3.9		9.2	50.4	43.5		8.8	4.4	26.6	
9.2	56.4	32.4		9.0	39.0	54.6		9.1	47.0	2.0		9.5	50.7	10.9		8.0	28.1	13.0	K
9.3	8 0.2	30.4		9.5	40.6	7.2		8.9	25 3.0	14.1		9.4	56.1	0.0		9.4	33.5	34.6	
9.5	3.5	50.8	B	9.2	56.9	14.3		9.3	4.6	5.8		8.4	58.2	35.6		8.4	34.4	14.4	K
9.5	25.9	25.5		9.5	58.7	59.7		9.5	21.4	43.5		9.4	34 19.6	7.0		9.5	38.2	31.9	
8.6	32.4	26.2	L	9.5	17 3.4	29.1		8.8	25.8	10.4		9.0	29.1	25.2		8.5	43.3	53.6	
9.5	42.2	50.5		9.5	16.3	12.1		9.4	33.9	50.9		9.1	31.4	18.0		9.5	58.5	13.1	
9.5	46.8	5.5		8.9	23.8	25.4		9.3	37.0	42.7		9.5	52.4	50.9		9.5	44 1.6	19.7	
8.8	52.5	38.6	L	9.5	24.2	49.9		8.2	41.2	24.9	R	9.4	35 19.5	54.7		6.8	3.1	4.6	K
9.4	54.7	57.4		9.5	41.9	24.9		9.5	26 8.0	20.5		8.8	32.0	48.5		9.3	22.0	12.6	
9.2	9 0.0	26.3		8.9	51.4	5.2		8.7	8.8	50.4	K	9.0	34.9	32.1		9.3	37.1	20.4	
9.4	6.9	57.7		9.5	18 10.6	6.3		9.5	9.6	59.3	B	9.3	48.5	14.6		9.3	57.7	14.1	
8.0	11.6	8.7		9.2	13.0	54.5		9.5	43.5	7.4		9.4	36 8.4	5.5		9.2	58.0	52.2	
9.5	33.1	41.4		9.4	18.2	52.2		8.8	27 19.1	31.6		8.8	19.1	39.6		9.0	45 10.1	55.4	
9.3	44.4	39.8		7.5	35.0	17.4	L	8.9	20.4	12.6		9.5	21.8	54.5		9.5	16.2	14.4	
8.1	54.0	52.6	L	8.8	53.9	50.9		9.3	28.5	49.4		9.1	25.0	26.3		9.0	16.5	38.1	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ᵘ	+28°			19ᵘ—20ᵘ	+28°			20ᵘ	+28°			20ᵘ	+28°			20ᵘ	+28°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	45 21.2	29.5		9.4	53 39.1	4.2		9.0	0 24.4	54.7		9.0	9 43.0	13.3		9.1	18 48.5	50.8	
9.5	29.5	13.9		9.3	39.6	56.5		9.5	28.5	9.1		8.8	10 10.8	36.5		9.0	19 15.6	26.6	
9.5	42.8	13.9		9.5	47.7	40.7		9.5	1 5.1	26.7	R	9.5	27.9	35.0		9.5	30.1	3.3	B
9.4	46.9	59.6		9.3	50.4	6.6	R	9.3	11.3	19.0		8.1	29.6	41.3	B	9.3	36.1	2.2	
9.3	49.6	4.2		9.4	50.8	55.8		9.4	15.5	28.4	R	7.7	40.6	4.7	L	9.3	46.8	16.7	
9.3	53.7	38.8		9.5	55.2	47.1		8.8	20.4	54.4	K	9.4	49.6	45.4		9.3	20 7.2	40.9	
8.6	55.0	54.4		9.3	58.0	51.1	B	9.4	42.9	11.3		9.4	11 6.3	1.0		8.7	9.0	59.6	K
9.0	46 16.8	30.2		9.3	54 6.6	20.5	B	9.4	43.0	22.3		9.5	10.1	56.0		9.3	9.1	8.5	B
9.3	19.4	51.9		9.5	7.5	37.3		9.4	43.3	56.8		8.0	16.5	28.6	K	9.4	13.8	16.0	
8.7	36.0	46.9		9.3	10.3	17.0		9.5	52.9	35.3		9.4	18.0	2.1		9.4	21.4	3.8	
8.5	41.0	10.4		9.5	11.8	5.0		9.5	54.1	45.6		9.4	23.0	56.9	B	9.4	29.0	51.3	
9.4	49.2	12.4		9.4	17.0	22.2		9.5	2 5.5	9.4		9.0	28.1	26.4	K	9.4	37.7	29.7	B
7.3	59.0	37.1	L	9.5	22.7	51.1		9.3	10.4	13.3		9.4	28.8	38.5	B	9.5	38.3	36.2	
8.3	47 17.0	13.9		9.4	27.6	21.9		9.3	15.6	6.1		9.0	36.4	4.2	B	9.0	44.5	52.5	
8.3	26.1	8.2		9.5	50.5	53.1		9.3	31.2	20.5		7.0	37.5	41.7	K	9.5	54.1	30.2	
9.5	41.2	42.6		8.7	55 1.2	22.0		9.3	43.2	44.2		9.4	58.8	17.3		9.3	57.9	33.4	
9.0	51.1	0.8		8.1	12.6	44.5	K	9.5	51.3	37.3		9.5	12 7.1	44.9		9.5	21 9.6	50.2	B
9.0	56.0	20.0		9.0	24.5	30.0	K	9.5	59.0	54.6		8.7	17.5	45.9		9.5	34.2	1.9	
9.3	56.8	9.0		9.5	29.0	20.2		8.2	3 0.9	15.5	L	9.3	39.1	5.4		9.4	48.7	40.7	
9.5	48 1.0	51.5		9.0	40.3	48.4	B	9.5	5.9	59.6	B	9.5	58.1	48.5		9.5	22 14.9	32.6	
8.7	9.6	0.8	K	9.2	45.9	44.3	B	9.5	16.5	10.8		9.5	58.4	54.8		8.5	27.5	28.6	B
9.2	16.0	25.7		9.3	47.1	54.0		9.0	23.4	15.1		9.3	58.8	47.5	B	8.2	34.0	1.9	K
9.3	16.5	34.2		9.4	49.5	34.3		9.4	48.9	14.3		9.5	13 10.3	47.9		7.8	36.8	18.2	K
9.5	41.1	44.0		9.3	57.4	9.9	B	9.0	4 8.6	46.4		9.2	35.0	26.1		8.8	43.1	5.4	K
9.5	53.2	13.9		8.5	56 1.5	8.6	L	7.1	33.7	0.2	K	9.1	36.6	6.3		9.5	51.1	24.4	
9.4	54.2	16.6		9.3	1.8	16.0		7.5	38.5	56.0	L	9.3	40.9	46.2		9.5	23 1.3	59.8	
9.2	49 13.1	7.1		9.0	9.5	50.1		8.4	56.7	2.7	K	9.4	45.0	51.1		9.2	8.5	48.9	
9.0	28.9	23.5		9.3	16.1	38.2	B	8.4	57.2	48.6		9.4	58.0	29.6		9.5	11.8	36.5	
8.8	34.0	58.8		9.0	21.1	24.4	K	8.9	57.3	24.3	B	9.3	14 34.3	19.8		9.1	32.4	12.3	
9.2	46.1	1.8		9.2	22.3	17.0		9.0	5 0.0	8.1		9.0	34.5	29.6		9.3	37.4	20.2	B
9.1	48.7	16.1		9.5	24.1	42.4		9.1	9.6	29.6		9.4	45.0	48.6		9.5	42.1	7.9	B
8.0	50.6	22.0	K	9.3	24.5	28.6		9.0	24.0	9.1	K	9.0	46.6	4.4		9.5	58.7	21.5	
9.3	53.3	4.6	B	9.1	28.6	7.1		7.7	29.1	44.4	L	9.3	15 3.5	11.1		9.1	24 2.5	50.4	
9.4	54.0	9.0		9.2	38.4	34.3		9.5	40.3	19.3		9.5	50.6	7.4		9.5	11.4	55.4	
9.4	58.1	36.3		7.1	50.6	7.1	K	9.2	58.1	25.7		8.7	59.3	37.3		9.1	28.7	22.7	
8.5	50 5.2	50.4		9.5	54.3	19.2		8.5	58.7	41.2		9.0	16 2.0	30.7		9.2	34.3	1.2	
9.4	21.3	11.8		9.3	57 10.5	51.6		9.0	6 4.5	28.5		8.2	9.0	22.8	B	9.5	48.9	35.0	
9.5	24.4	35.9		9.4	15.8	18.0		8.5	5.1	45.7		9.4	12.0	22.6	B	9.1	25 7.1	27.4	
8.4	40.5	14.0	K	9.5	18.1	59.3		9.3	13.0	8.1		8.2	22.8	37.3	K	9.0	13.4	25.9	B
9.2	43.6	50.7		9.3	27.5	51.1		9.4	14.6	18.0		9.3	25.3	23.7	B	8.9	22.1	7.5	K
9.4	58.8	36.9	B	8.9	40.5	51.0		8.6	14.6	3.4	K	9.3	29.6	5.2		9.4	22.1	21.5	
7.0	51 29.6	18.6	K	8.8	45.9	34.3		9.0	22.6	46.6		9.1	37.0	8.8		9.3	22.7	52.9	
8.9	29.9	58.1	B	9.0	46.5	29.1		8.8	24.7	41.5		9.5	37.7	0.4		9.4	28.1	21.5	
9.3	35.4	54.8	B	9.3	58.5	15.6	B	8.5	25.3	56.8	K	9.0	47.9	10.5	B	9.5	38.3	39.0	
9.4	35.8	56.2		9.1	59.2	10.1		9.4	29.1	46.2	B	9.0	49.4	55.5		9.5	43.0	13.0	
7.4	52 1.6	29.1	B	9.5	58 1.4	21.1	B	9.5	42.5	45.9		9.4	54.1	16.9	B	8.0	26 40.4	33.8	B
9.0	6.8	56.2	B	9.4	42.4	53.9		9.3	48.8	42.7		9.5	55.7	9.8		8.2	49.6	33.2	B
9.2	16.6	7.6		9.5	45.2	23.8		9.3	7 0.4	46.6		9.5	17 12.3	58.8		9.5	27 0.6	21.9	
9.5	17.4	18.8		9.5	54.0	9.1		9.5	6.5	9.4		8.3	19.2	20.5	K	9.4	1.8	22.9	
9.4	22.8	50.9		9.5	59 9.3	16.5		9.2	8.3	57.0		9.1	29.7	43.5		8.7	2.3	22.4	B
8.7	23.7	40.7		9.4	31.4	13.5		9.5	10.1	3.7		9.5	35.4	33.1		9.4	18.4	55.5	
8.2	27.4	13.3	K	9.3	32.1	55.0		9.5	28.0	29.6		9.5	46.5	9.4		9.2	28 8.0	11.3	
8.0	31.1	35.8	L	9.3	35.3	35.8		9.2	38.5	52.6		9.4	51.8	59.0		9.5	13.7	2.2	
9.5	45.9	27.6		9.3	39.7	43.5		9.5	8 2.9	33.1		9.5	18 1.1	4.2		9.0	23.4	14.5	
8.9	55.5	4.4		9.2	42.3	28.2		6.0	15.4	15.3	K	7.4	10.0	32.1	L	9.3	25.5	8.6	
9.5	53 6.3	51.6		9.2	43.5	51.5		9.2	50.1	37.4		9.0	22.4	39.8	B	9.1	32.6	49.2	B
9.5	11.4	35.0		8.9	54.5	31.9	B	9.3	54.4	13.6		9.4	22.8	58.8		9.4	35.8	44.3	
9.4	14.1	32.9	H	9.3	0 10.4	14.8		9.5	9 15.8	17.6		8.3	24.9	53.8	K	9.3	39.8	59.9	
9.5	25.0	48.9		8.5	13.9	30.2	K	8.8	29.9	48.6		9.5	26.3	57.8		8.7	48.6	3.7	K
9.5	31.5	1.4		9.3	19.2	42.1		8.9	39.7	44.4		8.0	44.6	3.9	K	9.2	49.8	51.2	

3801—3860				3861—3920				3921—3980				3981—4040				4041—410			
	20ᵘ		+28°		20ᵘ		+28°		20ᵘ		+28°		20ᵘ—21ᵘ		+28°		21ᵘ		+
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	
9.5	29	0.6	7.1	9.5	37	2.1	1.8	8.0	48	10.1	26.1	K	9.5	58	38.3	59.2		9.5	10	52.4	5
9.5		0.9	14.8	9.5		7.8	54.8	9.4		11.6	51.2	B	9.0	59	2.5	3.5		9.4	11	12.1	4
9.5		23.2	23.2	9.5		10.3	13.8	9.2		22.3	22.8	B	9.5		15.7	57.7		9.5		16.7	
9.2		39.1	56.3	9.5		20.7	48.0	9.4		40.8	15.8		8.0		19.0	31.5	K	8.8		21.0	3
8.7		54.3	16.3	L	9.2		41.4	56.5	8.9	49	0.4	14.8	8.2		24.0	9.8	L	9.5		21.6	
9.5	30	0.6	11.4		9.4		54.4	36.6	9.5		3.1	24.9	9.4		40.2	57.0	B	9.3		50.1	5
9.5		9.5	57.8	B	9.3		57.6	47.7	9.3		8.0	50.4	9.3	0	43.5	50.6		8.7		52.2	4
9.1		18.5	52.1		9.5		59.0	56.9	9.5		13.0	29.4	8.9		43.9	54.6		9.5		58.6	2
9.4		22.5	31.1		8.1		59.8	36.9	K	9.5		14.9	36.0	9.4		49.1	31.0	B	9.3	12	0.1	4
8.7		29.7	42.7		9.3	38	1.0	34.9		9.5		23.8	58.0	9.4		50.8	48.4		9.5		32.0	3
9.3	30	53.2	57.7	B	9.5		26.7	2.9		9.2		26.9	2.5	9.5	1	8.3	56.3		8.8		33.3	5
9.3		56.9	0.1		9.3		27.1	24.4		9.4		28.2	22.1	9.0		19.7	44.9	B	9.5		37.3	5
9.5	31	7.1	21.3		9.0		36.6	27.9		9.4		34.0	25.9	9.2		21.4	54.5		9.4		53.5	1
9.4		8.6	26.0	B	9.5		39.1	26.1		9.5		35.9	21.5	9.2		35.2	44.2		9.5	13	42.1	4
9.5		20.5	49.9		9.0	39	2.0	30.8		8.0		44.5	9.3	L	9.2		41.7	1.9		9.4		50.8	2
9.3		23.7	43.9		9.4		2.3	7.3		8.4		59.7	1.4	L	8.5		57.7	2.7	K	9.4		54.0	3
9.3		24.1	19.2		9.4		9.2	8.9	B	9.5	50	4.6	31.5		9.2	2	10.8	38.0		8.5		58.9	3
9.2		46.1	37.1	B	9.0		22.3	37.6		9.5		13.0	37.8		9.5		13.0	0.7		7.6	14	19.0	1
9.2		47.4	13.0		9.5		30.1	39.8		9.4		32.1	7.1		9.3		13.9	33.8		9.3		29.3	
9.3		51.7	44.2		9.5		36.2	43.5		9.3		37.3	1.0		9.3		21.0	31.8		9.5		48.3	
9.2	32	7.1	1.2		9.3		54.0	28.0	B	9.3		39.2	53.5	B	9.3		23.4	13.6		9.5		55.9	4
9.5		13.3	37.7	B	9.1	40	11.7	20.5		9.5		53.3	36.5		9.4		53.7	33.2	B	9.5		56.0	4
9.3		29.8	38.5		9.3		26.6	45.7		9.5	51	3.3	47.9		8.9		55.6	47.1		9.0	15	7.8	3
9.3		30.7	20.2		9.5		42.4	53.9	B	9.4		5.1	46.7	B	9.2	3	1.2	41.4		9.4		35.3	5
9.4		38.6	45.9		9.0		44.3	17.0		9.3		10.7	46.7	B	8.5		13.9	25.2	K	9.3		52.3	5
9.4		40.0	29.1		9.5		57.7	52.9		9.4		23.6	26.1		9.5		28.5	14.9		8.4	16	2.0	3
9.5	33	3.3	16.3		9.3	41	33.6	1.3		9.0		30.5	15.0		9.4		38.3	30.0		8.9		2.8	5
8.0		16.9	35.3	K	7.7	42	3.7	0.0	K	9.4		35.6	1.8		9.0		45.7	24.5	K	9.4		10.3	5
9.0		20.4	14.3		9.5		26.8	59.1		9.5		37.2	1.2		8.8		52.7	51.7		9.5		16.9	1
9.3		23.1	27.9		8.3		32.8	16.3	K	9.4		40.8	31.8		9.1		55.4	23.7	B	9.3		25.9	3
9.4		25.6	7.4		9.2		38.6	4.0		7.7		54.5	50.1	K	9.4	4	5.1	42.8		9.4		43.4	4
9.5		29.7	1.0		9.1		44.3	39.7		8.3		57.2	42.9	L	9.3		22.9	0.0		8.7		46.6	3
8.7		35.1	3.9	K	9.4		57.4	15.3	B	9.5	52	43.9	11.6		9.5		30.3	6.7		9.4		51.4	3
9.3		53.6	5.2		9.5	43	9.8	28.9	B	9.5		50.1	26.6		9.3		40.6	20.8		9.5	17	4.6	
9.5		58.5	17.5		9.5		18.5	7.9		9.5	53	9.0	11.0		9.3		41.5	40.1		9.5		18.2	
9.3		59.4	53.1		9.1		19.5	49.2	B	9.5		24.7	43.4		8.8		51.7	50.7	K	9.5		24.2	
9.5	34	0.0	34.9		9.5		34.6	59.4		9.2		36.1	26.1		9.3	5	12.0	57.5		9.5		25.9	
9.5		2.8	38.5		8.0		52.1	26.6	L	9.2		36.4	12.1		9.5		28.3	37.3	B	9.4		32.4	
9.1		12.5	50.1		9.5		55.7	0.8		9.3		42.2	21.2	B	8.9		28.7	26.3	K	9.5		32.7	
9.5		20.4	8.8	B	8.5	44	5.5	50.8		8.8		48.7	43.4		9.4		48.3	7.5		9.5		35.8	
8.8		32.5	31.1		9.2		22.7	42.2		9.4	54	7.5	57.3		8.9	6	14.7	16.0	B	9.5		44.5	
9.5		35.5	8.5		8.5		24.0	10.6	L	9.0		20.4	12.8		9.5		14.8	29.2		9.5		50.7	
9.5		57.4	0.4		9.4		42.8	38.5		8.5		21.9	34.8		8.0		14.8	21.6	B	9.5		53.3	
9.4		58.2	19.0	B	9.0	45	1.4	36.3		8.9		26.9	52.1	B	8.8		56.2	2.7	K	9.3	18	46.4	
9.5		59.1	26.6		8.8		6.0	9.9		9.4		31.1	22.2		9.5	7	0.4	57.5		7.3	19	2.2	
9.3	35	2.7	40.7		9.4		20.8	16.0		9.5	55	6.4	11.8		9.2		7.2	0.6	K	9.5		22.1	
9.1		2.9	54.3		8.0		59.3	19.5		9.2	56	20.8	55.6		8.5		33.0	42.6		9.5		27.7	
9.5		9.0	7.9		9.1	46	3.7	44.2		9.4		21.0	8.9		9.5		51.3	1.4		9.5		33.0	
8.0		16.5	50.8	K	9.3		5.6	55.9		9.4		33.4	51.1	B	9.2		59.4	9.7		9.5		38.3	
8.8		22.0	48.9	K	8.8		10.1	6.9		8.2		45.1	25.4	K	8.8	8	8.4	59.1		9.2	20	3.1	
9.5		36.2	21.7		9.5		19.5	8.6		9.3		58.4	54.8		8.8		10.8	29.1		9.5		4.6	
9.5		41.4	55.5		9.4		22.9	11.8		8.8	57	3.9	13.1		8.5	9	0.3	53.4		9.5		9.1	
9.4		44.6	45.6		9.4		38.8	36.3		9.4		6.0	29.1		9.5		6.2	10.8		9.5		55.3	
9.3		46.9	42.7	B	9.3		49.5	10.6		7.0		20.0	31.6	K	9.5		12.7	11.6		9.5		58.5	
9.5		59.2	21.2		8.0		50.6	47.4	K	9.5		45.4	53.3		9.5		38.6	21.5		9.5		59.5	
9.5	36	2.7	41.5		7.7		57.9	36.0	K	9.4		49.6	6.6		9.4		50.4	18.0		9.1	21	35.4	
9.3		14.1	7.4		8.7	47	8.1	24.4		9.4		57.1	59.7		9.4	10	2.0	3.6		9.5		39.1	
9.4		21.1	56.6	B	9.5		27.2	18.4	B	9.3	58	18.8	39.2		9.5		6.0	9.0		9.3		39.3	
9.4		29.3	0.7		9.5		37.0	31.3		9.4		22.1	27.6		9.5		13.3	4.3		9.5		41.5	
9.5		33.3	18.7		7.5		51.3	57.2	K	9.2		29.0	29.1		9.5		44.4	14.5		9.5		44.4	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	22ᵘ	+28°			22ᵘ	+28°			22ᵘ—23ᵘ	+28°			23ᵘ	+28°			23ᵘ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.0	27 15.0	59.9	L	7.8	42 55.2	10.9	K	9.4	58 58.2	13.5		9.0	19 13.8	33.2		9.3	40 18.1	13.7	
9.1	24.0	46.5		8.7	43 12.7	31.1	K	8.3	59 6.2	10.1	K	8.7	28.9	14.5	K	9.5	38.0	23.0	
8.6	24.5	11.5		9.5	23.1	4.9		9.0	32.8	11.0	B	9.5	29.5	59.8	B	8.8	53.3	1.9	
9.3	52.7	57.8	B	9.5	45.5	47.9		9.0	33.8	15.5	K	9.5	20 7.4	20.7		9.5	41 37.0	28.9	
8.3	52.8	59.1	K	9.4	44 4.4	52.1	B	9.5	38.2	35.3		9.5	15.2	3.1		9.0	39.3	21.6	
8.9	28 1.9	50.7	K	9.5	10.1	2.4		9.4	42.3	47.7		8.5	25.6	26.6	K	8.6	58.7	54.6	
8.6	5.7	43.8	B	9.4	22.0	2.4		9.5	54.9	2.9		9.0	39.9	6.2	K	9.0	42 6.4	55.1	K
9.3	12.9	11.1		8.5	22.6	29.3	L	9.3	0 7.1	37.4		9.4	53.7	38.1	B	8.9	20.8	26.0	K
8.9	56.9	11.7	R	8.8	23.8	46.5		7.8	52.3	54.6	K	8.7	21 3.5	44.5	L	6.2	21.1	2.8	K
9.3	29 31.1	40.1		9.5	49.2	45.5		9.4	57.6	48.8		9.5	16.5	50.4		9.3	48.4	41.7	
8.0	31.5	59.9	K	9.5	45 5.2	44.0		9.4	58.5	35.9	B	9.0	23.0	14.8	K	9.5	58.8	7.8	
9.5	33.4	15.6		8.5	6.7	37.6	L	9.5	1 9.1	36.8		9.0	22 33.7	27.8	B	9.5	43 1.4	30.9	
9.2	40.6	50.3	B	8.9	17.0	50.0		7.2	27.6	23.8	K	8.6	37.8	5.8	K	9.2	4.4	32.7	B
9.4	44.1	5.7		9.2	50.4	23.1		9.5	45.9	52.9		9.1	23 28.4	26.6		9.3	45 7.0	29.2	
8.0	30 10.5	58.9	K	8.8	56.4	40.4	B	9.2	2 30.0	56.4	B	9.2	24 6.2	12.5		8.3	13.5	8.4	K
9.4	35.2	13.3		9.3	46 7.8	39.8		7.0	32.4	53.0	K	9.5	25 59.0	1.4		9.0	22.6	32.7	K
9.2	50.4	37.5		9.5	45.7	4.6		9.0	47.3	14.1	B	9.4	26 9.0	33.9		9.0	27.2	48.6	
9.0	58.9	4.6	B	9.5	47 20.3	29.4		9.1	48.6	19.1		9.5	10.2	31.4		9.5	41.7	51.0	
9.0	31 0.0	24.3	K	8.7	40.9	35.7		9.5	3 17.9	41.5		9.5	14.2	45.2		9.5	45.6	52.1	
9.5	13.3	28.7		9.5	41.0	4.0		9.5	38.6	17.4		9.5	43.2	8.0		9.3	47.0	13.4	
9.5	15.7	11.1		9.5	49.6	37.9		9.3	39.5	31.1		9.3	27 22.4	24.0	B	9.5	47.9	21.6	
8.2	36.5	57.2	K	9.3	48 8.4	49.1		8.8	54.0	9.9		9.5	41.1	37.5		8.3	46 19.1	0.1	K
9.4	45.8	12.5		9.5	29.0	28.7		9.1	4 6.9	31.8		9.5	44.5	23.4		9.5	47 3.3	8.0	
7.8	53.5	57.0	K	9.5	54.8	52.5		9.1	8.4	8.0		9.5	28 53.5	25.9		9.5	3.6	25.8	
9.0	32 13.4	29.6		9.3	49 18.7	48.3		9.4	9.2	42.4	B	8.5	29 5.2	6.0	K	8.7	8.7	52.3	L
9.2	17.1	6.8	B	9.5	25.3	27.7		9.5	5 8.5	49.0		9.5	13.9	2.4		7.2	35.6	40.6	K
9.5	21.7	15.4	B	9.5	35.7	52.9		9.3	39.2	6.1		9.5	54.2	25.2		8.5	39.0	38.6	K
8.5	24.7	39.9	K	9.5	55.9	2.7		6.5	6 3.2	39.4	K	9.3	30 11.1	31.8		9.5	43.9	54.5	
9.5	48.5	17.4		9.5	50 10.5	58.4		8.5	37.9	31.0	K	9.5	14.8	12.1		8.8	44.1	26.4	K
8.7	33 27.8	7.6	R	9.2	15.2	33.0	B	9.3	42.0	16.8	B	9.5	48.9	37.0		8.8	48 54.0	4.6	K
9.4	35.0	9.5		9.2	23.0	14.8		9.4	50.9	20.6		9.3	31 37.8	56.9		9.5	55.9	42.4	
9.5	40.4	53.3		9.5	39.3	36.7		9.5	7 10.8	30.7		9.5	41.6	7.3		9.3	49 20.0	2.1	
9.5	46.9	45.3	B	8.8	39.5	55.7	K	9.5	13.6	26.6		9.5	45.8	15.1	B	9.5	50 8.4	34.0	
9.4	34 15.0	52.7		9.3	51 23.0	24.2	R	9.1	18.2	55.3	K	9.5	32 15.6	46.9		9.5	26.8	7.4	
9.0	28.1	32.8	R	9.3	28.3	53.2		7.0	21.4	57.6	K	9.5	33 46.1	37.0		9.3	29.1	48.3	
4.5	57.8	33.0	K	8.3	48.2	11.9	K	8.9	34.4	7.4		8.9	35 8.0	1.6	L	9.5	42.5	41.7	
9.5	35 5.7	12.1		9.5	52 7.0	31.1	B	9.0	35.9	40.8		9.4	24.8	0.4		9.3	56.5	46.6	
9.3	37.1	11.6	B	9.1	8.3	44.6	B	9.5	8 48.6	33.4		9.0	31.7	44.0		8.2	51 0.1	2.4	K
8.7	46.5	57.4	R	9.4	21.5	44.4		9.3	9 14.8	37.3		9.4	32.2	2.2	B	9.5	11.2	4.8	
8.9	36 1.5	58.4	R	9.0	40.7	40.6		9.1	10 19.5	51.8		9.2	36.8	26.9		9.0	40.8	24.3	K
9.4	35 6	34.7		8.6	53 4.0	13.6		9.3	11 43.2	3.1		9.4	47.1	1.1		9.4	40.8	45.1	
8.2	37 0.3	50.1	K	9.5	44.6	1.0		8.5	12 44.7	5.1	K	9.1	36 7.7	1.8		9.3	46.5	0.4	
8.0	7.9	30.8	K	9.5	54 43.2	38.7		9.4	50.8	54.9		9.0	21.9	30.0		8.7	52 12.0	15.0	K
8.6	23.1	51.0	K	9.5	49.8	40.1		9.5	13 14.6	56.6		8.5	32.0	3.8	L	9.3	21.4	33.3	
9.2	38 13.4	5.6		9.5	57.3	20.4		9.5	30.5	43.5		9.4	35.0	56.3	B	9.5	44.9	6.3	
8.7	52.9	37.2		8.2	55 17.2	37.6	K	9.1	39.8	26.9		9.4	34.5	6.9		9.3	56.3	49.1	K
9.5	53.6	43.0		9.5	33.0	47.0		9.4	41.2	37.0		5.2	44.1	34.8	L	9.3	53 7.7	33.2	
9.3	39 0.9	29.3		9.5	35.1	42.2	B	8.5	42.8	3.3	K	8.5	45.1	29.7	L	9.0	31.0	19.5	K
9.4	34.5	40.6		9.1	42.8	36.6		8.9	14 0.6	27.4	B	9.5	45.2	41.4		9.5	35.7	36.8	
9.0	54.6	59.1		8.7	44.2	26.6	L	8.6	7.7	31.4		8.3	37 17.3	58.0	K	9.5	49.0	14.0	
9.4	55.3	28.4	B	9.0	56 22.0	56.2		9.2	15.8	42.7	B	9.1	18.8	8.1	K	9.2	53.4	25.0	K
9.4	58.5	51.7		9.4	36.6	30.4		9.3	15.9	48.6		9.4	21.5	3.7	B	9.3	54 38.7	4.9	
9.4	59.1	0.5		8.9	46.5	4.7		8.7	32.6	53.5	K	8.9	36.4	2.4	K	9.3	55 24.8	14.9	
9.4	40 37.9	12.4		9.5	57 8.3	24.2		9.5	41.1	23.1		8.6	41.7	45.5	K	9.5	40.3	41.3	
9.5	41 8.8	50.3		8.3	13.0	2.6		8.3	15 16.1	37.6	L	9.5	38 15.0	47.6		9.3	55.3	15.0	
9.1	17.3	56.2		9.5	58 3.5	12.4		9.5	16 40.8	12.4		9.5	22.9	3.7		9.5	56.8	23.3	
9.5	33.2	20.2		9.3	20.5	44.2		7.0	56.9	53.3	K	9.3	39 22.0	8.0		8.8	57 12.0	55.0	
9.5	57.6	14.5		7.5	30.3	14.0	K	9.2	17 10.2	0.5		8.6	23.6	11.8	K	9.4	31.7	45.8	
8.9	42 34.5	54.8		9.3	32.3	31.5		9.5	18 42.1	27.6		9.5	41.3	34.0		9.5	32.0	52.8	
9.5	41.1	41.1		9.5	38.6	9.0		9.5	19 9.1	41.4		9.3	40 16.2	56.9		9.5	41.9	49.0	

4701—4702				4703—4704				4705—4706				4707—4708				4709			
	23ʰ	+28°			23ʰ	+28°			23ʰ	+28°			23ʰ	+28°			23ʰ	+28°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	58 5.4	11.6	K	9.3	58 15.4	33.8		8.7	59 11.8	1.5	K	9.0	59 21.6	19.0	B	9.5	59 51.9	40.6	
9.5	10.3	38.6		7.5	59 6.5	13.9	K	9.0	18.0	8.2		8.7	34.1	49.3					

Zone +29°

1—40				41—80				81—120				121—160				161—200			
	0ʰ	+29°			0ʰ	+29°			0ʰ	+29°			0ʰ	+29°			0ʰ—1ʰ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	0 11.3	40.1		9.5	11 33.6	32.8		9.1	20 40.7	38.7		9.0	34 24.7	49.9		9.3	52 15.9	52.3	
7.7	34.3	3.2	L	9.1	12 8.6	34.5	K	9.5	21 14.8	1.7		9.1	41.0	50.9		9.5	20.4	3.2	
8.8	42.0	10.9		9.1	36.3	28.0	K	9.5	15.5	9.2		9.3	41.1	29.5		9.5	36.0	22.6	
9.5	50.8	49.6		9.4	40.5	51.7		9.4	39.6	38.0		9.5	35 1.7	8.9		9.5	53 5.3	17.5	
9.1	57.0	3.8		9.4	42.2	59.1		8.6	43.1	55.4	K	7.7	4.2	18.8	K	9.0	26.2	13.5	K
9.1	1 37.3	23.0		9.0	13 22.6	15.4		9.0	46.5	48.1		9.5	4.5	41.8		8.8	29.8	50.7	K
9.5	50.9	52.1		9.4	37.3	55.2		9.3	22 0.0	50.5		8.7	31.4	24.8	K	9.3	41.6	31.5	R
9.0	2 27.5	25.1		9.5	47.4	28.3		8.5	4.6	20.7	K	9.2	36 41.4	17.7		8.3	54 19.9	22.5	K
9.5	45.4	44.2		9.5	14 14.5	59.8		9.5	14.5	59.0		9.5	46.4	2.0		9.4	42.5	52.3	
8.0	3 20.8	52.9	K	9.5	17.3	54.7		9.0	54.7	23.8	K	8.8	37 2.2	48.5		7.8	55 0.1	12.3	K
9.2	28.8	16.3		9.5	18.3	46.1	B	9.5	23 2.9	4.0		9.5	51.1	46.8		9.2	0.6	55.3	B
9.0	29.1	3.6		9.5	47.6	7.1		8.8	5.1	14.2	K	8.5	53.1	33.2	K	9.5	1.7	15.4	
9.5	47.2	17.3		9.1	49.4	0.5	K	9.5	24 14.4	17.1		9.3	38 34.3	5.4		9.5	56 15.6	33.2	
8.4	53.3	39.0	K	9.5	15 42.0	54.1		8.7	15.3	43.0	K	9.5	39 15.6	38.3		9.5	57 16.4	14.0	
9.1	58.4	0.4		9.4	44.6	35.3		9.4	23.0	44.2		9.5	18.9	30.8	B	8.8	58 15.1	8.4	K
8.8	4 50.2	10.6	K	9.5	16 2.8	47.2		9.3	30.1	25.1		9.3	40 25.7	48.1	B	8.9	59 7.3	27.7	R
9.5	5 6.3	7.1		9.5	14.3	23.1		9.2	25 10.6	9.5		8.6	27.4	51.7	K	9.5	48.1	50.8	
9.5	29.6	45.5		9.5	23.6	50.8		8.9	15.3	17.9		9.1	41 40.0	57.1		9.5	0 3.3	53.9	
9.5	37.0	51.5		9.5	55.2	37.6		9.5	26 50.1	27.0		8.8	56.5	38.5	K	8.5	22.1	39.7	K
9.4	42.5	27.9		9.0	17 6.5	52.6		9.5	27 35.6	55.0		9.3	57.9	41.0	B	9.5	24.6	0.2	
9.3	43.3	41.8	K	9.4	10.3	26.2		8.5	36.6	25.5	K	7.6	42 2.9	38.8	K	7.2	52.0	39.3	K
9.5	54.1	49.0		8.3	29.2	2.5	L	9.1	43.6	19.3		9.3	48.5	10.8		9.3	1 4.6	41.1	
9.5	6 17.0	12.3		9.0	36.0	12.7		9.0	55.7	50.6	K	9.5	43 13.0	21.8		8.2	22.0	28.1	K
9.5	19.8	14.7		8.5	41.2	17.5	K	9.5	28 11.1	34.2		9.2	36.4	22.4	B	8.4	27.1	40.8	K
9.3	28.5	37.6	K	9.4	42.1	47.0		8.3	19.1	12.6	K	8.2	44 51.9	49.1	L	8.7	2 23.9	5.7	K
9.4	7 9.2	40.3		9.1	18 0.6	16.1	K	9.0	36.0	48.0	K	9.5	45 9.2	40.4		9.5	36.0	39.4	
8.9	15.4	29.0		8.7	3.9	10.2	K	8.3	50.1	2.8	K	7.5	18.8	32.8	K	9.0	46.1	2.0	
8.7	48.2	44.0	K	9.5	30.2	19.9		9.5	29 33.8	43.9		9.5	46 2.9	41.9		9.4	58.6	27.1	
9.2	8 21.6	48.0	K	9.0	48.7	2.2	R	9.3	30 5.5	34.8		9.2	54.1	44.9	B	9.5	3 38.2	42.1	
9.5	24.5	57.4		9.5	49.1	5.9		9.4	6.6	8.1		7.8	47 32.4	53.1	K	4.2	41.0	20.5	K
8.6	39.1	43.7	K	9.5	19 0.9	23.7		9.0	8.5	40.9		9.3	55.9	1.5		9.5	49.6	37.3	
9.0	49.3	39.8	K	9.5	7.5	31.0		9.5	26.8	11.0		9.4	48 1.2	18.0		9.3	54.3	12.7	B
9.0	49.6	2.7	K	9.5	10.6	47.6		9.5	50.9	5.0		9.0	22.6	57.0	K	9.4	58.4	20.3	
9.5	9 16.0	15.2		9.5	12.5	40.0		9.4	31 45.7	7.4		8.9	25.5	8.3		9.3	4 49.1	27.5	
8.9	23.1	13.4	K	8.8	41.0	52.8		9.5	32 26.6	8.5		8.8	35.9	28.0	K	6.5	5 1.1	19.1	K
9.5	41.5	30.7		9.1	48.1	17.3		9.4	27.9	49.9		9.2	41.8	46.0		9.5	22.6	3.3	
8.4	10 12.0	20.6	K	9.2	20 25.7	21.0	R	9.3	41.5	2.0		9.5	57.3	29.5	B	9.5	28.3	33.2	
8.9	42.1	48.7		9.2	26.1	41.1		9.5	50.1	16.8		8.3	50 7.9	31.8	L	8.5	35.6	42.6	L
8.0	50.0	34.5	K	9.3	28.8	56.3		8.5	56.6	13.1	K	9.5	38.9	48.3		8.8	6 13.4	12.6	K
9.4	11 31.5	8.9	B	9.5	33.5	27.9		9.5	33 18.1	59.4	B	9.5	51 48.9	12.3		7.5	21.4	47.4	K

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+29°		1ᵘ		+29°		1ᵘ—2ᵘ		+29°		2ᵘ		+29°		2ᵘ		+29°	
m	′	″	′		m	′	″	′		′	″	′		′	″	′		′	″	′	
9.5	6	38.2	9.9		neb	25	42.0	54.0	9.5	46	36.5	6.4	9.5	7	51.2	57.3	9.2	28	16.2	39.0	
9.5		49.3	13.9		9.5		59.3	3.8	9.2		44.3	2.8	K	8.5	8	2.4	7.2	K	8.8		19.2	31.6	K
9.0	7	2.6	28.1	B	9.5		59.4	25.5	9.3		57.5	29.5	K	9.5		2.9	47.5		9.1		33.2	59.5	
9.5		7.0	9.0		9.5	26	53.9	33.7	7.5	47	30.6	39.0	K	9.0		13.8	6.2	K	7.8		35.6	46.6	K
9.1		21.4	40.3		9.2	27	7.3	55.3	K	9.3		37.2	58.5		9.0		21.4	17.1	K	9.0	29	2.5	7.2	
8.9		23.1	51.8	K	9.5	28	4.4	32.2	B	8.3		39.1	0.1	K	9.3	9	40.3	33.3	B	9.5		31.6	32.1	
9.4		51.8	22.7		9.5		24.2	4.8		9.1		47.6	8.6	K	7.5		41.6	10.9	K	9.5		37.5	8.8	
9.5	8	40.7	50.5		9.3		25.2	54.4		9.4	48	1.4	50.8		8.5	10	46.0	22.8		8.7	30	13.2	54.6	K
7.8	9	4.7	13.5	K	9.5		52.5	1.3		9.0		5.3	44.2	B	9.5	11	3.0	45.8		9.5		44.9	11.8	
9.2	10	14.3	3.0		9.0	29	6.5	56.2	K	8.2		10.6	44.6	K	9.5		10.6	35.2		9.2	31	0.9	19.7	
9.4		19.5	7.7		9.1		25.9	48.5		9.3		33.4	56.4		9.4		14.9	51.0	B	9.5		3.0	3.2	
8.9		40.4	3.5	B	9.5		48.8	8.3		9.5		46.2	29.9		6.5		34.5	31.7	K	9.2		42.7	45.4	
9.2		48.8	24.0	K	9.3		51.4	14.9		9.5		50.7	52.0		8.3		45.4	8.4	K	7.5		46.1	9.3	L
9.4		49.7	6.8	B	9.5		55.5	13.5		9.5	49	13.5	21.9		9.2		46.3	35.7	B	9.2		50.6	7.7	B
9.5	11	0.2	6.0		9.4	30	30.5	34.1		9.5		23.9	31.9		9.5	12	32.6	22.6		9.5		58.2	44.3	
9.4		18.3	40.6		9.5		53.0	6.7		9.5		25.2	52.3		8.6		39.3	15.2	K	9.5	33	22.3	30.0	
9.5	12	7.7	31.3		9.3		56.8	21.6		9.5		41.7	51.9		9.3		42.4	35.7		9.5	34	18.7	45.2	
9.3	13	4.2	48.8		9.3		58.9	50.4		9.4		44.8	58.7		9.5	13	34.8	17.3		9.5		40.5	8.2	
9.0		13.5	31.7		8.3	31	29.4	21.3	K	9.0		58.9	8.4		8.5		44.5	39.9	B	9.5		42.8	52.1	
9.2		25.4	53.4		9.0		42.4	38.9	K	8.8	50	11.0	1.6		8.7		44.7	37.6	K	9.5	35	30.2	55.5	
9.5	14	14.0	6.6		8.8		44.3	47.8	L	9.5		32.1	4.8		7.9		55.1	39.5	B	8.6	36	59.8	43.4	K
9.0		21.4	8.5	K	9.5	32	6.1	4.3		9.5		49.0	11.3		8.5	14	55.2	30.7	K	9.2	37	10.5	50.7	B
9.4		41.2	25.6		9.5		10.2	53.5		9.0		55.6	16.1		8.9		59.3	27.9	K	9.3		16.0	47.5	B
9.2	15	17.2	24.4		9.4		20.2	10.3	B	9.4	51	6.4	3.7		9.2	15	41.7	19.1		9.5		58.5	19.1	
9.2		40.9	27.2		9.5	33	26.4	47.2		9.5		37.7	43.3		9.3	16	20.4	6.5	B	8.7		59.0	8.2	K
9.5		48.5	48.2		6.0		27.0	19.3	K	8.3	52	24.1	13.6		8.4		21.0	59.7	K	9.4	38	15.8	37.3	
9.4		57.3	58.0		9.5		52.5	13.5		9.4		31.6	18.4		9.5		35.9	52.7		9.5		15.9	14.7	
9.5		57.3	48.9		8.3		56.3	21.0	K	9.5	53	44.0	10.8		9.5		49.8	1.2		8.8		22.6	27.5	K
8.6	16	23.9	4.9		9.5	35	1.9	38.9		8.1	54	5.1	4.2	K	9.5		58.3	59.2		9.5		35.5	10.1	
9.5		34.4	44.3		9.4		56.8	44.4		8.5		6.9	35.6	L	7.8	17	5.4	14.0	K	9.2		47.8	5.7	K
9.5	17	22.3	34.0		9.5	36	27.5	53.7		9.5		36.0	43.3		9.5		16.3	24.6		7.4	39	3.2	4.9	K
9.5		22.6	55.7		9.4		45.9	36.2		8.6		50.5	6.3	K	8.7		43.0	15.5	K	9.5		31.3	52.3	
9.4		40.6	16.4	K	9.5		54.0	5.6		9.5	55	25.9	21.2		9.5		55.9	28.9		8.3		38.6	44.5	K
9.5		40.9	59.1		9.5	37	12.4	43.8		9.4		33.0	14.1	B	9.5	18	13.4	36.3		9.5	40	11.1	59.2	
9.5	18	3.0	8.3		9.2		25.9	13.6	B	7.9		39.0	12.3	K	9.5		53.3	18.8		9.5		26.4	20.5	
9.5		38.4	13.5		9.5		39.8	49.4		9.5	56	49.7	4.5		9.5	19	10.6	58.2		9.5		31.5	5.1	
9.1		39.8	0.2	K	9.4		41.2	56.5		9.1	57	10.2	38.2		5.5		42.8	1.1	K	9.4		50.3	26.6	
9.4		58.5	51.3		9.5	38	18.5	9.8		9.0	58	8.9	43.9	K	7.7		44.2	13.7	S	9.4		54.7	52.0	
7.5	19	15.3	1.6	K	9.5		22.6	37.2		9.3		32.8	11.6		8.6	20	5.5	4.9	K	9.2	41	0.3	58.5	K
8.3		23.6	46.7	K	8.8		24.9	28.7		9.5		48.9	45.3		9.5		9.9	46.3		9.2		13.1	23.6	
9.5		40.0	34.4		9.4		36.7	59.0		7.8	59	15.3	4.0	K	8.1		17.0	1.5	K	7.1		21.0	54.9	K
9.5	20	4.8	28.9		9.2		46.8	55.5	K	9.5	0	45.9	6.5		9.5		17.2	49.3	B	9.3		47.5	10.7	K
7.5		12.4	47.8	K	9.5	39	12.4	10.0		9.5		53.6	47.1		7.5		22.3	16.9	S	9.5		55.7	3.0	
9.5		32.6	5.4		9.5		52.3	12.1		9.5	1	28.9	22.3		9.1		22.4	41.3		7.7	42	25.3	41.1	K
9.3		49.0	33.6	B	9.3	40	27.8	32.0	B	9.0		40.6	42.6		9.5	21	5.1	34.8		7.7		26.7	55.4	K
9.5	21	0.2	37.3		9.5		30.9	57.4		8.7		57.1	8.1	K	9.5		56.3	55.9		9.3		32.8	14.1	
9.5		8.3	20.0		8.8		43.3	48.1	K	9.3		58.5	39.2		9.5	22	27.1	48.7		9.3		55.4	46.7	
9.5		13.4	16.8		9.4	41	49.4	21.0		8.3	2	23.6	23.6	L	9.3		46.9	56.1		8.3	43	24.9	35.8	K
9.0		16.9	36.8		8.5	42	19.9	45.8	L	8.1		44.5	13.6	K	9.2		47.3	16.4		8.0		27.8	56.0	K
9.5		32.1	39.5		9.5		23.5	56.9		8.1		44.7	26.7	K	9.5	23	18.0	47.0		9.5		33.4	20.5	
9.1		48.8	30.7		9.5		37.4	34.1		5.0	3	58.6	38.1	K	9.4		37.0	56.7		8.8		35.1	11.6	
9.2	22	0.1	22.4		9.5		42.0	23.2		9.3	4	4.4	49.8	B	9.5		49.0	52.5		8.2		40.7	35.1	K
9.5		37.9	48.9		9.3		49.6	34.8	K	9.2		32.6	19.8		9.2		58.2	58.3		8.7	44	14.9	33.2	K
9.5	23	12.4	25.8		9.5		52.5	11.1		7.8		43.2	52.6	L	7.7	24	38.1	19.3	K	8.9		37.6	14.4	
9.4		32.8	57.9		9.5	43	1.7	6.9		9.5	6	13.2	53.2	B	9.4	25	31.3	21.6		9.0	45	21.3	30.7	
8.3		37.6	52.5	K	9.0		24.4	38.5	K	7.3		17.2	43.6	K	9.4		32.7	26.1		9.5		41.6	13.5	
9.5	24	27.9	2.7		9.0	45	1.6	19.0	K	9.5		45.7	51.5		9.5		43.6	12.3		9.5	46	3.9	13.7	
8.5	25	9.0	8.2	K	9.1		6.4	45.2		9.4	7	2.0	5.6	B	7.9	27	29.6	14.3	B	9.5		13.8	55.3	
9.1		28.9	14.2	K	9.4		24.8	0.7		9.5		34.2	36.7		9.5		43.0	5.3		9.5		42.9	11.0	
8.0		30.1	39.6	K	8.9	46	33.4	34.6		9.0		48.9	15.4		6.5		48.2	18.5		8.6		55.6	53.2	

501—560				561—620				621—680				681—740				741—800			
	2ᵘ—3ᵘ		+29°		3ᵘ		+29°		3ᵘ—4ᵘ		+29°		4ᵘ		+29°		4ᵘ		+29°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.1	48	17.1	52.8	K	9.5	18	31.8	16.4		9.0	39	22.3	29.5	K	9.5	6	57.0	0.4		6.5	39	13.3	31.5	K
8.7		54.5	7.6	K	9.4		50.8	58.3		9.5		49.8	57.7		7.8		58.5	40.0	K	7.0	40	7.3	18.6	L
9.0	49	4.2	4.6	K	9.4	19	7.1	11.5	B	9.3		50.6	37.7		9.0	7	9.2	38.9	K	9.0		15.7	38.4	
9.2		9.7	11.3	L	9.1		26.8	22.7		9.4		54.5	43.5		9.5		15.1	0.4		9.3		30.0	9.8	
9.5	50	34.3	57.4	B	9.1		29.8	16.5	K	9.2	40	18.9	4.0		9.5		57.3	46.8		9.5	41	12.3	8.8	
9.5		42.4	29.7		6.8		53.8	52.2	L	9.2		34.3	32.2		9.4	8	3.3	6.4		9.5		28.3	31.2	
9.2		51.3	57.0	B	9.4	21	1.5	51.8		9.5		39.4	7.8		9.5		44.5	32.0		9.5		53.8	25.0	
8.6	51	43.4	58.2	K	7.5		25.0	32.2	K	9.5		45.9	4.2		9.1	9	7.9	58.5		9.2	42	16.7	34.0	K
9.5	52	39.0	6.5		9.4		26.8	25.4		8.8		49.8	24.3	K	9.1		12.0	27.2		9.5	43	56.9	32.0	
9.4		53.8	3.7		8.5	22	8.3	7.2	K	9.4		57.8	39.6	B	9.1		51.5	38.9		9.0	44	11.5	17.7	
9.5	53	22.9	10.9		7.8	23	16.3	30.1	L	9.5	41	0.2	32.9		9.4	10	14.4	11.0		9.5		22.6	31.0	
9.0		28.1	53.8	K	8.3		20.6	1.9	K	7.8		13.8	11.3	K	9.1		14.5	38.9		9.4		28.0	36.1	
9.4		42.9	7.1		9.5		41.8	0.9		8.5		34.8	17.8	K	9.3		18.0	46.1		9.5		35.7	28.5	
9.2	54	6.0	16.3	B	9.5	25	14.3	52.8		9.3		41.0	58.9		9.4		48.8	59.9		8.8		48.2	5.9	K
9.5		12.8	18.8		9.5		39.9	3.8		8.1	42	1.8	13.7	K	9.5	11	16.9	56.8		8.9	46	8.8	15.4	
9.3		28.2	4.4		9.5	26	5.8	25.7		8.2	43	11.6	9.9		9.5		21.4	51.2		9.1		11.9	18.5	
8.4		57.6	55.9	K	9.1		22.3	27.4		9.4		18.8	6.2		9.4		24.6	11.7		9.5		31.3	6.0	
9.0	56	23.1	37.0		9.5	27	0.8	55.7		9.5		34.9	21.8		9.4	12	10.3	55.0		9.4		39.2	53.0	
8.6		57.5	56.9	K	7.4		17.3	30.8	K	9.3		38.9	4.7	B	9.2		36.5	6.9		9.5		54.6	8.0	
9.5	57	6.0	8.0		9.3		35.3	23.6		9.5	44	14.1	45.3		8.2		39.9	51.3		9.0	47	16.3	44.6	
9.5		53.8	1.4		9.1	28	18.3	25.3		9.5		36.3	46.3		7.6		51.3	18.1	B	9.5		36.2	24.5	
7.5	58	6.6	58.4	K	9.5	29	0.1	57.0		9.5	45	36.5	8.9		9.2	13	15.5	29.3	B	9.4		42.8	14.7	
9.5		7.0	43.5		9.5		41.8	55.3		9.5		47.8	28.8		9.5		25.8	41.4		9.5		43.0	17.5	
9.2	59	0.6	53.3		9.5	30	5.3	11.2		9.5	46	53.1	2.8		9.5	14	15.4	5.5		9.5		51.5	3.3	
9.3		12.5	47.7		9.4		21.3	35.3		9.5	47	12.8	5.5		9.2	15	8.3	25.4	B	9.3	48	0.4	59.2	
9.5		16.8	19.4		9.1		27.8	40.2		9.5		38.7	20.3		8.8		19.0	47.1	K	9.2		13.1	56.1	K
9.5		29.4	55.7	B	9.4		31.8	21.6		9.0		52.9	6.3	K	9.3		36.8	53.4		9.1		21.3	27.7	
9.5	0	6.9	38.7		9.5		50.5	53.3		9.5	48	21.5	0.4		9.4	16	5.3	21.4		9.2		31.0	40.1	
9.0		58.5	40.8	K	9.0	31	27.0	4.4	K	9.1		28.7	34.3	K	8.7		7.2	27.5	K	9.2		33.0	59.9	
9.3	1	19.0	4.6	K	8.9		28.8	28.8	L	9.4		52.3	7.9		9.2		8.7	2.8		8.8		47.7	20.1	
8.8		32.6	6.4	K	9.5		34.2	54.2		9.1	49	31.3	36.0		8.7		33.3	35.4	K	7.7		49.5	54.0	K
9.5	2	6.9	2.8		8.6	32	23.9	1.4	K	9.5		34.2	15.7		8.0		33.8	11.2	K	9.5	49	4.6	47.7	
9.4		31.5	10.5		9.3		36.0	20.5	B	9.5		34.5	4.9	B	9.4	17	5.5	5.6		8.3		7.0	36.0	L
8.0	3	11.7	16.8	K	9.2	33	32.3	17.7	B	9.2		56.7	22.5		9.5		23.0	7.3		7.0		35.3	36.7	L
9.0		28.9	16.0	K	9.3		49.3	48.3	B	9.4	50	0.8	36.0		9.0	18	38.3	54.2	K	9.5		43.7	11.5	
9.5	4	1.9	30.1		9.5	34	1.6	52.8		9.1		11.3	24.0		8.3	22	29.1	35.4	K	9.5		46.9	54.2	
9.3		23.0	52.5		8.5		4.8	44.2	K	9.5		17.8	45.3		9.1	23	15.0	48.8		9.5	50	31.5	55.3	
9.3	7	7.1	57.7		9.5		28.3	29.5		9.1		19.7	37.0		9.5		58.2	22.7		9.0		36.3	21.7	
9.5		43.2	28.7		9.1		33.3	6.9		8.0	51	8.9	18.2	K	9.5		59.1	3.1		9.1		55.7	17.0	
9.5	8	52.7	23.7	B	9.1		42.3	13.4	K	8.7		10.7	10.2	L	9.3	24	32.0	53.7	K	9.4		56.4	43.5	
9.5		54.7	4.3	B	9.3		52.3	3.1		9.4	52	1.4	47.6	B	8.9	26	5.3	33.3	K	9.5	51	3.4	58.8	
9.0	9	31.9	47.7	K	9.0	35	0.0	5.0	K	9.3		40.4	50.1	K	9.4	27	11.1	56.7		9.0		26.6	14.7	
9.5	10	32.6	4.6		8.5		3.2	13.0	K	9.3	53	6.2	57.6		9.5		42.2	12.3		9.5		38.8	54.5	
9.5		41.3	27.0		9.4		9.3	58.5		9.5		53.1	6.3		9.1		55.0	27.8		8.2	52	0.1	6.8	K
9.0	11	36.7	37.2		9.4		21.9	5.7		9.0	55	20.3	21.2	K	8.4	29	20.9	5.5	K	9.3		10.3	43.5	
9.3		48.9	21.7		8.2		44.3	22.2	L	9.5		43.8	18.9		9.5		41.3	7.8		9.0		16.7	38.7	
9.5		50.8	11.5		8.0		53.8	40.8	L	9.5		55.2	7.9		9.5	30	27.0	34.6		8.4		33.0	27.0	K
9.3	12	22.2	47.5	B	9.1	36	11.3	21.2	L	9.5	56	39.3	59.7		6.5	31	14.4	41.2	K	9.5		37.8	23.8	
8.4		29.3	44.8	K	9.0		12.0	8.9	K	9.4		42.2	47.0		8.9		53.7	26.0	K	9.3	53	0.0	46.8	
9.4	13	33.8	57.3		9.5		15.4	47.2		9.5	57	4.7	57.7		9.0	32	12.0	1.5		9.2		3.0	59.9	
9.5	14	0.3	52.1		9.1		19.8	16.4		9.5		30.8	35.0		9.5	34	24.0	11.6		8.8		3.9	46.9	K
7.7		3.3	16.8	K	9.5		40.0	41.2		7.5		49.7	52.5	K	9.5		32.3	59.8		9.0		12.3	48.7	K
9.5		16.4	35.0		9.5		42.3	26.4		9.2	58	4.5	2.1		9.2	37	27.4	4.8		9.3		36.6	49.6	
9.4		35.5	51.3		9.5		49.8	7.0		9.4	0	17.1	21.3		9.2		31.4	2.3		9.5		46.3	32.6	
8.0		38.4	55.1	K	9.5		51.4	0.1		9.5		51.4	21.7		9.4		33.0	25.1	B	9.5		49.2	38.5	
9.0	15	3.8	21.6		8 3	37	31.3	12.3	K	8.0	2	33.5	27.2	K	9.4		51.0	21.8		9.5	54	26.5	53.0	
9.1		26.8	45.6		9.5	38	15.7	48.4		9.5	3	33.4	14.5		9.5	38	0.9	24.1		9.1		53.0	42.3	
9.2	16	21.7	19.2		8.9		18.2	41.2		7.0	6	5.3	32.1	K	8.8		13.7	3.8	K	8.5		58.1	41.1	L
9.2	17	1.1	57.5		9.3		22.5	16.0		9.5		24.4	26.2		9.5	39	4.1	46.7		9.3	55	0.3	48.7	
9.1		50.8	24.0	K	8.3		29.2	24.1	K	9.5		44.9	57.7	B	9.4		9.2	41.0		8.0		15.2	25.2	K

801—860				861—920				921—980				981—1040				1041—1100			
	4ᵘ—5ᵘ	+29°			5ᵘ	+29°			5ᵘ	+29°			5ᵘ	+29°			5ᵘ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	55 44.5	24.2	B	9.5	9 35.1	1.4	B	8.5	22 34.4	19.5	L	9.2	36 7.5	5.5		8.8	46 22.1	54.9	
7.8	46.0	46.3	L	9.5	37.3	1.7	B	9.3	58.5	12.6		9.5	9.7	6.7		9.5	54.3	58.9	
9.5	59.8	58.0		9.5	10 7.1	16.5		7.8	23 1.3	5.2	L	7.5	18.2	13.9	L	9.4	47 0.0	53.6	
9.5	56 14.2	15.8		9.3	26.6	20.6	B	8.6	19.8	17.8		9.4	34.8	30.1		9.5	11.2	57.3	
9.4	24.6	47.3		9.3	31.0	57.3		9.5	59.5	25.0		8.9	43.1	3.9		8.5	15.2	43.0	
8.0	57 0.6	34.0	L	9.5	39.8	18.8		9.5	24 3.3	30.5		9.5	51.8	55.2		9.2	17.9	52.5	
9.3	3.5	16.4		9.5	11 45.9	57.1		9.4	5.6	15.6		9.3	53.5	33.5		9.5	22.1	50.8	
9.5	46.5	6.1		9.5	47.1	15.4		9.3	14.0	7.9		9.5	37 7.6	33.7		9.4	22.9	23.5	
8.5	46.5	52.1	B	6.0	59.6	25.4	K	9.4	21.1	3.7		9.3	20.3	20.2		9.5	48 9.9	51.6	
9.4	58 4.3	2.7		9.1	12 25.7	46.0		9.3	57.1	47.1	B	9.2	20.9	7.6		9.5	16.2	31.9	
9.2	10.1	28.5	B	9.0	42.0	39.1	K	9.5	25 3.9	55.7		9.3	31.0	23.9		9.4	23.1	19.3	
9.4	27.5	41.2		9.2	13 3.2	29.8		9.3	16.0	9.6		9.0	41.6	44.9		9.5	24.6	52.5	
8.9	37.2	58.5		9.5	16.7	14.6		9.2	29.2	42.5		9.5	55.1	26.3		9.5	30.0	50.8	
9.3	43.3	16.1		8.7	18.4	7.2		9.2	36.7	56.4		8.0	55.4	22.3	K	9.0	34.7	47.4	K
9.1	47.0	41.5		9.1	32.0	47.0		8.9	42.2	12.1	K	9.3	38 4.3	42.8		9.5	47.1	18.2	
9.1	51.9	1.6		7.5	45.9	34.3	K	9.5	26 3.4	9.6		9.5	5.2	50.5		8.8	59.9	23.2	
9.5	59 16.4	56.9		9.5	14 9.9	56.0		9.5	4.3	38.5		7.0	10.1	35.9	K	9.5	49 4.0	6.9	
9.5	33.3	34.7		8.5	21.3	32.2	K	9.5	27 0.0	8.8		9.5	10.6	2.6		7.8	9.1	36.0	S
9.5	0 4.4	26.2		9.2	23.5	25.8		9.5	29.1	35.0		9.5	19.5	13.7		9.2	25.3	31.3	
8.9	6.9	23.7	K	9.0	45.9	35.0	K	9.5	33.4	34.4		9.5	41.4	25.6		9.2	25.3	30.1	
8.5	14.5	46.4		9.4	15 26.5	4.6		8.7	45.1	12.8	K	9.5	45.5	45.6		9.0	35.4	9.1	
6.5	30.1	36.3	K	9.5	42.3	56.2		9.5	28 51.8	17.5		9.2	55.8	42.4		6.8	39.1	57.8	L
9.5	49.7	54.2		9.1	44.9	48.8		9.5	52.3	0.2		9.5	39 22.1	22.7		9.5	43.0	59.4	
9.5	58.3	4.5		9.1	50.0	7.8		9.5	29 17.2	22.4		8.2	38.0	41.7	L	9.5	49.2	24.4	
9.3	1 7.6	21.9		9.4	58.8	52.0		9.3	32.4	7.6		8.2	39.9	4.7	K	9.4	53.8	19.7	
9.3	9.3	28.1		8.4	16 3.7	28.6		9.3	38.6	40.2		9.5	46.7	50.4		8.5	50 19.1	59.2	K
9.3	21.7	1.3		9.1	9.8	13.3		6.2	30 5.9	7.6	K	9.3	49.8	59.1		9.5	27.2	8.7	
9.2	31.5	37.4	B	8.4	11.9	4.4	K	9.5	7.5	26.4		9.1	54.2	38.0		9.5	55.8	13.2	
8.4	52.0	36.1	K	9.5	13.0	30.2		8.3	13.8	44.7		7.8	40 1.6	40.3	K	9.0	57.0	24.0	
7.0	2 5.2	32.6	B	9.4	18.2	52.1		9.4	48.7	34.3		9.2	19.9	7.9		9.2	51 1.9	35.2	
9.4	2 7.4	25.8	B	9.2	26.4	30.1		9.5	31 25.5	1.4		9.5	41 11.9	30.5		9.4	25.5	28.4	
9.5	7.8	2.7		9.5	43.2	16.5		8.8	40.2	0.5		8.8	17.6	42.3	K	9.0	26.5	15.5	
6.5	23.6	43.9	K	8.0	59.1	51.3		7.0	32 5.9	24.5	K	9.5	39.5	7.5		9.5	47.7	50.5	
9.0	47.3	19.7	B	9.5	17 21.5	4.2		7.5	6.9	25.2	K	9.5	42 3.2	49.9		8.4	52 4.5	25.9	
9.0	3 36.9	10.1		9.2	40.6	32.0		9.3	28.5	38.3		9.5	4.3	42.5		8.3	9.5	33.8	K
9.3	57.2	0.8		9.5	49.8	14.8		9.5	30.1	6.4		9.5	5.4	53.1		9.4	20.8	29.8	
8.9	4 3.9	48.4		8.0	54.4	47.4	L	9.4	34.4	15.3		9.2	28.8	12.8		9.1	51.2	33.0	
8.9	30.7	17.1		9.3	18 12.3	4.7		8.7	40.0	12.9	K	9.4	30.3	46.4		9.1	51.5	59.6	K
9.4	42.5	50.7		9.5	35.2	40.0		9.4	40.1	23.2		9.5	43.0	40.7		9.5	55.8	7.9	
9.3	47.4	53.6		9.3	45.5	35.8		8.7	42.9	11.4	K	9.0	51.9	20.0	K	9.5	53 22.0	50.7	
9.5	56.9	8.0		9.2	48.1	27.6		8.8	43.6	26.5	K	9.0	54.1	52.4		9.4	26.4	31.0	
8.5	5 19.0	55.4		9.1	56.9	55.3		9.1	55.4	9.8	K	8.2	43 1.3	28.1	K	9.5	28.3	5.1	
9.0	31.8	8.6		9.3	19 8.7	54.1		9.0	33 4.8	38.7	K	9.5	20.9	33.1		9.0	47.5	46.9	
9.5	49.0	51.7		9.2	25.8	59.7		7.7	13.9	46.3	K	9.5	21.7	12.8		9.5	48.0	48.4	
8.9	57.4	3.6		9.5	30.5	53.7		9.5	19.2	4.5		9.5	25.8	48.0		9.3	52.4	26.4	
9.1	6 5.5	6.9		9.4	59.4	19.6		9.5	21.1	3.0		9.4	29.7	51.8	B	9.5	54 14.9	30.7	
8.8	34.7	17.9	B	9.5	20 9.7	29.0		9.1	27.3	50.4		8.5	30.4	44.0		9.2	20.0	34.9	
9.3	35.1	39.1		9.5	16.5	15.0		9.3	45.7	56.5		8.3	43.9	3.9	K	9.2	21.5	20.3	K
8.8	7 3.4	11.3	B	7.0	27.9	3.9	K	8.5	55.0	52.3	K	9.5	56.8	18.1		8.6	30.8	22.8	K
9.1	18.1	12.8		8.7	47.2	42.4		7.0	34 9.6	7.8	K	9.1	44 7.7	57.5		9.5	31.6	20.8	
9.5	50.4	55.0		7.5	52.4	25.6	K	8.8	21.3	40.5		9.2	31.8	5.2		9.2	39.4	57.5	
9.5	8 5.9	29.2		9.3	21 5.8	22.4		8.8	38.7	32.4		9.5	36.4	51.1		9.2	42.7	29.2	
9.5	10.9	34.4		9.5	11.5	51.1		9.5	41.9	50.4		9.1	41.7	7.6		9.5	49.5	37.1	
9.5	19.7	42.9		9.5	22.7	46.9		8.2	50.4	25.7	L	9.5	42.5	21.0		8.7	55 0.5	30.9	
9.5	40.0	23.7		9.5	23.6	40.5		8.0	35 0.8	56.3	K	9.4	50.3	26.2		9.5	9.3	4.0	
9.5	40.1	58.8		9.5	42.8	35.1		9.5	1.2	5.2		9.5	45 20.8	37.3		9.5	40.1	26.5	
9.3	9 15.5	13.4		9.4	50.0	58.6		9.5	6.6	37.6		7.2	46 4.8	55.5	L	9.0	45.4	18.8	K
8.9	17.0	43.4		9.2	22 5.6	38.8	B	9.4	23.0	7.2		9.2	14.0	40.0		9.2	52.7	50.2	
9.3	33.3	46.7		9.4	19.9	54.8		9.4	32.3	50.0		7.5	15.1	8.4	K	9.4	53.5	35.4	
8.7	34.6	33.3	K	9.4	21.7	50.1		9.5	37.4	29.5		9.3	16.2	36.6		9.0	56 6.4	3.0	K

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ—6ᵘ	+29°			6ᵘ	+29°			6ᵘ	+29°			6ᵘ	+29°			6ᵘ	+29°	
m				m				m				m				m			
9.4	56′ 13.0	1.8		8.8	7′ 12.1	44.6		8.7	17′ 4.6	43.0	K	9.5	26′ 59.5	38.0		9.4	37′ 1.8	16.5	
9.5	16.5	7.9		9.5	15.7	48.1		9.5	25.5	1.8		8.6	27 4.6	50.3	K	8.2	18.9	59.3	K
9.5	21.5	55.2		8.5	49.8	35.5	K	9.5	25.9	57.7		9.5	55.4	33.4	B	9.5	19.0	34.1	
9.5	40.2	13.4		9.5	8 20.4	56.4		9.2	44.4	50.5		9.0	28 5.2	59.2		9.3	19.5	12.3	
9.4	41.6	44.5		7.7	31.5	15.9	R	9.2	52.0	6.0		9.5	10.4	20.9		8.8	40.6	0.9	
8.9	43.0	22.5		9.4	37.2	58.7		8.7	59.5	25.5	L	9.0	12.5	3.4	K	9.4	52.7	27.8	
9.5	43.2	29.5		9.5	44.5	45.7		9.4	18 12.1	1.1	B	9.3	23.9	57.6		9.5	38 6.5	52.7	
9.5	52.4	4.3	B	9.5	53.5	29.4		8.0	13.5	42.8	L	9.5	26.5	27.8		9.5	43.4	28.0	
8.5	57 0.1	17.2		9.4	9 7.0	18.2		9.4	17.9	20.5		8.8	28.4	35.2		9.3	51.6	52.7	
9.3	1.4	43.8		7.0	20.5	50.3	L	9.3	43.5	21.5		9.5	44.5	17.7		9.5	59.3	5.3	
7.5	3.5	6.2	K	9.5	33.3	5.8		7.6	48.5	19.6	K	9.5	53.5	18.2		8.2	39 5.2	20.4	K
6.0	7.5	31.0	L	8.8	56.7	58.6	L	9.2	56.7	42.7		9.0	29 0.8	52.2	K	9.4	25.0	42.1	
9.4	33.6	34.4		8.8	57.5	26.2	K	9.4	19 16.5	46.5	B	6.2	10.7	5.8	K	9.5	37.1	55.2	
9.5	37.0	40.6		9.1	59.6	21.5		9.3	22.6	21.3		9.5	29.7	55.5		9.3	40 3.9	15.7	
9.5	42.5	4.3		9.3	10 9.4	29.7	B	9.0	26.1	51.0		9.4	37.0	27.6		9.3	5.5	5.1	B
9.5	58 11.9	20.1		9.5	11.1	15.9		9.2	40.5	51.4		9.4	45.9	59.3		9.3	9.2	36.8	
9.5	25.7	56.4		9.5	18.4	31.3		9.5	47.0	29.7		7.8	53.5	52.1	K	9.1	16.6	22.2	
9.5	41.3	8.7		9.3	24.5	29.1		9.3	20 1.9	15.7		9.5	30 12.1	32.6		9.5	24.2	30.9	
8.7	51.9	4.5	K	9.4	45.5	38.4		9.2	5.5	43.1	K	9.0	34.5	25.7		9.5	25.5	48.2	
9.5	59 17.0	10.8		8.8	58.5	33.2	R	9.5	6.6	27.3		9.0	48.5	41.3		9.3	37.3	12.8	
8.8	21.5	2.0	K	8.9	11 10.5	43.4	R	8.0	8.5	34.0	K	9.3	52.4	22.9		8.6	46.5	42.7	L
9.4	31.0	55.6		9.4	11.3	1.4		9.5	32.7	43.4		8.9	57.6	1.3		9.5	46.5	35.0	
8.6	32.7	52.1		9.4	15.9	45.3		9.5	42 9	51.4	B	9.1	31 2.7	5.9		9.5	58.1	2.1	
9.1	40.9	13.5		9.4	18.2	6.0		9.1	51.6	37.6	B	9.5	16.1	56.2		9.4	58.3	39.0	
8.9	51.5	34.5		9.5	28.0	3.3		9.5	21 3.0	12.2		9.1	42.0	53.1		9.5	41 11.5	48.1	
8.4	0 10.5	8.0	K	9.5	30.0	26.8		9.4	18.5	19.4		9.5	53.8	29.6		9.2	12.5	28.2	
9.5	19.3	42.8		8.9	33.0	37.9	R	9.4	21.4	13.2		7.2	32 3.5	50.6	K	9.4	23.6	48.0	
7.8	29.5	15.7	K	9.0	36.5	1.4	K	8.3	29.6	55.3	B	9.4	6.5	49.0	B	9.3	24.2	33.3	
9.4	31.7	14.8	B	7.0	49.8	25.6	K	9.3	31.5	40.9		8.3	12.6	5.9	K	9.4	33.1	36.9	B
9.5	45.0	36.5		6.4	56.5	35.7	K	9.1	39.5	30.8		9.4	13.3	11.1		9.5	34.3	59.0	B
8.5	50.6	22.7	K	9.3	12 1.6	43.0		9.2	53.5	53.5		9.5	30.3	3.4		9.5	42.0	25.6	
9.5	1 9.6	48.9		9.0	4.5	18.9	R	9.4	22 17.6	34.8		9.2	43.7	23.7		9.4	45.4	54.3	
8.5	18.5	26.1	K	9.2	12.5	18.4	R	9.0	31.4	20.7		9.5	44.5	28.4		9.4	42 3.5	56.6	
9.3	25.2	40.9		9.5	12.9	8.3		9.2	33.7	5.6		9.4	47.6	0.7		8.2	7.5	18.3	K
9.2	29.4	56.1		9.4	46.4	30.0		8.9	39.5	27.3		9.1	51.3	36.6		9.4	8.8	25.5	
9.0	55.2	55.5		9.5	48.7	34.8	B	9.3	49.6	8.3		9.5	52.4	52.4		9.5	24.0	8.4	
9.5	2 1.4	5.0	B	9.5	59.6	16.2		9.3	23 3.5	15.2		9.0	33 9.5	45.2		9.5	44.6	6.0	
7.7	31.5	42.9		9.4	13 12.5	1.4		8.7	7.9	28.3		9.5	17.3	7.9		9.5	48.3	40.5	
9.3	44.8	57.8		9.5	23.8	47.3		9.4	18.2	59.8		8.6	17.5	34.1	K	9.5	43 5.0	57.6	
7.6	51.0	30.8	S	8.6	30.9	59.9	K	9.2	32.5	8.3		7.8	19.6	30.5	K	9.5	8.4	52.7	
9.5	3 2.5	53.0		9.1	33.5	29.5	K	9.1	33.0	15.7		9.4	31.6	6.6	B	9.3	8.6	24.5	
9.3	3.4	41.9		9.5	40.7	15.7		9.2	36.5	51.2		9.3	43.9	46.6		7.7	27.5	36.7	L
9.3	13.5	6.9		9.4	14 7.8	51.5		8.2	49.5	30.2	K	9.5	34 17.8	5.8		9.5	28.2	6.7	B
9.0	14 6	56.2		9.4	13.5	1.1		8.2	24 16.0	46.4	L	9.4	32.9	51.8	B	9.5	33.7	6.0	
8.9	37.0	25.0	B	9.4	13.7	26.3	B	9.5	22.4	23.0		9.5	35 10.0	10.8		9.4	35.7	8.2	
8.7	40.5	45.4		9.5	17.5	3.3		9.5	33.5	36.6		9.4	16.5	17.2		9.4	40.5	49.6	B
8.2	4 3.0	4.2	K	9.4	20.4	58.0		9.5	38.3	24.5		6.0	34.5	6.8	K	9.5	44.2	15.1	
9.2	5 10.1	13.2		8.9	21.6	3.5	R	9.5	43.5	15.3		9.2	49.5	53.8		9.5	45.2	43.3	
9.4	22.5	22.1		9.0	22.5	48.0		9.4	43.5	18.2		9.5	53.2	23.1		8.7	44 10.5	44.3	K
9.2	28.0	53.0		8.9	39.5	2.4	R	9.1	25 3.0	23.2		9.2	59.1	22.0	B	9.5	21.9	19.6	
9.5	38.7	28.1		9.5	15 11.4	2.7		9.3	14.0	13.9	B	9.1	59.5	31.2		8.0	25.0	41.3	K
9.3	55.3	55.7		9.4	23.5	32.1		8.9	19.5	30.5	K	8.5	36 14.5	30.5	K	9.4	43.5	44.7	
8.3	58.5	19.2		6.8	36.9	47.4	K	9.4	28.7	47.6		9.4	16.0	22.9		9.5	59.5	36.8	
4.4	6 7.5	33.0	K	9.5	46.0	29.9		8.8	28.7	28.3	K	8.7	23.8	41.3	B	8.7	45 14.6	15.3	
8.5	10.5	16.0		9.5	16 3.2	51.9	B	9.2	47.5	47.8		9.5	24.8	45.3		8.9	19.5	7.3	K
9.2	12.3	25.6		9.5	6.6	7.4		9.2	51.1	16.0		8.3	32.5	27.8	K	9.4	22.0	50.3	
9.5	13.4	12.8		8.9	11.5	38.5		9.5	59.2	8.8		9.5	37.5	25.3		9.3	39.5	5.4	
8.7	16.6	0.6	K	9.4	27.0	13.3		9.5	26 28.5	4.9		9.5	42.4	18.1		9.5	46 0.4	3.3	
9.3	42.2	50.1		9.5	46.7	9.0		9.5	50.8	21.7		9.3	55.6	7.8		9.1	21.7	56.4	
9.2	7 5.4	50.4	B	9.2	59.6	14.3		9.4	59.1	8.4		9.5	37 1.5	57.7		8.8	26.0	23.1	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵐ	+29°			6ᵐ—7ᵐ	+29°			7ᵐ	+29°			7ᵐ	+29°			7ᵐ—8ᵐ	+29°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	46 39.1	2.6		9.0	58 49.3	21.8	K	9.5	13 59.7	21.9		9.5	32 21.1	18.6		8.3	45 1.8	34.6	K
8.9	42.6	14.0		9.4	59 8.5	12.5		9.2	14 0.4	41.3	B	9.5	22.5	4.6		9.5	11.7	58.7	
8.5	55.5	42.4	K	9.5	14.5	5.5		9.5	0.5	48.1		9.5	53.6	37.6		9.5	20.0	8.6	
9.3	47 6.7	55.1	B	9.4	27.2	18.2		9.5	4.3	33.7		9.2	33 3.4	21.4		8.5	29.2	22.1	K
9.0	7.5	22.8		9.3	33.9	51.9	K	9.5	13.7	32.8		9.4	12.1	35.5		8.3	46 26.6	31.8	
9.5	21.6	39.1		8.6	56.8	10.3		9.5	47.1	6.4		9.5	33.3	22.0		9.5	26.8	56.5	
8.7	24.0	8.5		9.5	0 3.1	54.8		9.5	15 5.1	14.6		8.1	36.8	9.8	K	9.5	49.9	8.3	
9.5	37.7	53.3		9.5	56.5	47.2		9.4	24.3	35.2		9.1	55.0	36.1	B	9.5	57.6	26.7	
9.3	53.1	15.7		9.5	1 7.5	34.8		9.4	16 9.2	7.9		9.0	34 3.5	6.5		9.3	47 2.5	22.6	B
9.5	48 3.6	5.8		9.0	53.7	55.6	K	9.3	15.1	38.4		9.0	13.3	13.5	K	9.4	15.5	19.3	B
9.2	25.8	2.2		9.5	2 12.0	32.6		9.0	17 57.0	22.3	K	9.2	47.5	22.9		8.6	17.6	18.5	K
9.3	40.8	19.2		9.3	25.2	26.7		8.8	18 1.7	34.5	K	9.5	49.0	33.0		9.5	37.8	12.4	
9.5	49.7	26.3		9.5	37.7	10.3		8.8	26.0	35.9	K	8.8	55.0	44.6	K	9.0	43.8	42.7	
9.5	54.8	31.7		9.2	3 3.8	33.9	K	9.4	29.3	17.1		9.1	36 23.8	5.8	K	8.6	55.9	55.0	K
8.8	49 12.9	2.7		9.4	10.6	55.0		7.6	19 3.4	42.4	K	9.5	24.0	48.5		9.5	48 9.9	37.9	
8.9	22.4	34.8		9.5	22.1	21.8		9.4	21.8	55.5		9.2	35.2	53.7		8.4	52.1	53.8	K
9.0	37.0	33.3	B	9.3	25.5	43.8		9.5	20 32.4	13.9		9.0	43.4	5.5	K	9.5	49 3.9	49.6	
9.4	41.0	48.4		9.5	31.6	19.0		9.3	55.7	52.7	B	9.5	51.1	15.3		9.0	21.5	35.8	K
9.5	47.6	27.3		8.7	47.9	32.7		9.0	21 15.2	41.0	B	9.2	37 7.9	19.3	B	9.4	58.5	22.9	B
9.5	54.3	51.5		9.5	4 10.1	41.7		8.0	15.4	29.1	K	9.2	10.3	9.9		9.2	50 14.7	9.2	B
8.9	59.1	29.4	K	9.3	53.1	31.4	B	9.0	51.5	27.5	K	9.3	24.8	8.6		9.4	18.1	25.3	B
8.8	50 7.0	50.2	B	9.4	5 4.5	6.4		9.5	52.7	20.5	B	9.5	46.7	41.5		9.1	21.0	33.0	
9.5	35.6	7.2	B	9.5	36.8	45.7		8.5	58.1	4.6	K	9.4	50.7	47.7	B	8.9	25.8	21.2	K
9.5	51.7	6.0		9.1	42.9	52.9	R	8.2	22 10.8	30.8	K	9.4	38 8.6	38.6		7.5	51 32.8	39.1	B
7.5	53.8	58.4	K	9.5	6 8.0	22.8		9.3	14.7	54.2		9.4	10.5	54.1		9.4	33.5	42.4	
9.5	51 2.0	28.8		9.5	21.6	26.5		8.7	36.9	7.9	K	9.0	14.6	56.5	B	9.4	52 24.0	21.6	
9.5	33.8	12.8	B	9.4	33.9	7.6	R	9.1	23 41.5	16.8		9.4	23.3	53.3		8.7	25.2	59.4	K
9.5	47.0	38.8		9.5	52.3	5.1		9.5	24 10.5	35.9		9.5	27.2	46.1	B	8.2	53.8	1.8	K
7.8	56.5	57.1	K	8.0	53.4	30.4	K	9.5	19.5	14.0		9.5	38.3	9.3		9.4	57.6	41.2	
7.5	52 3.7	25.2	P	9.5	7 7.6	36.1		9.5	24.1	6.6		9.4	38.8	49.1	B	9.5	53 1.9	6.2	B
8.9	12.6	30.4		9.0	23.9	29.0	K	9.4	52.4	57.7		9.2	42.3	38.4		9.5	40.3	56.7	B
9.0	17.2	26.0		9.5	47.1	54.1		9.5	25 12.2	41.4		9.5	48.6	36.2	B	9.2	58.1	34.7	R
8.9	22.1	35.3		9.3	50.6	48.5	K	8.7	30.1	2.4		8.6	55.0	30.4		9.3	54 22.4	56.1	
8.5	42.0	51.9	K	9.4	8 13.4	56.7		9.5	26 5.8	36.1		7.5	56.8	1.0	K	9.4	27.3	48.5	
9.4	53.9	39.8		9.5	18.0	15.8		9.5	18.5	4.2		7.2	39 27.7	7.0	K	8.7	33.4	9.3	K
9.3	56.2	59.3		9.5	45.5	32.0		9.3	29.8	55.9		8.6	44.7	16.1		9.4	46.9	33.0	
9.4	53 5.3	9.9	B	9.0	54.3	35.3		9.5	32.0	29.0		9.5	46.0	29.3		9.5	55 4.6	6.6	
9.4	7.6	34.6		9.4	9 3.7	10.4		9.5	40.5	54.8		9.5	56.9	9.0	B	9.5	17.4	40.9	
9.5	11.3	6.4		9.5	8.2	41.6		9.5	27 24.5	0.4		9.3	40 16.1	12.5		9.1	19.7	53.2	
9.3	15.6	55.3		9.3	18.2	9.4	B	9.3	29.7	46.3		9.2	41.6	27.1		9.4	20.7	22.0	B
6.3	54 16.2	35.6	L	9.0	34.3	16.8		9.5	28 8.1	35.2		9.5	56.5	21.7		9.5	21.2	13.1	
9.0	30.5	53.0	R	9.0	40.0	10.2	K	8.8	16.1	31.0	K	7.9	41 16.4	4.6	K	8.8	23.6	32.2	K
9.2	40.0	55.5	R	8.8	43.0	21.5		9.5	45.5	11.4		9.2	20.4	58.2	K	9.3	34.4	50.6	
9.0	42.4	2.5		9.4	52.7	54.6		9.2	29 25.5	36.9		7.2	42 23.4	31.5	L	9.4	56 12.3	57.3	B
9.5	56.5	47.8		8.0	54.8	25.9	K	9.4	28.1	53.5	B	9.2	32.6	16.2	B	9.5	32.0	2.9	
9.1	55 3.1	25.2		9.5	10 8.5	30.0		9.4	51.9	55.3		9.5	46.7	42.3	B	9.4	43.7	41.1	B
9.5	30.6	13.6		9.2	14.8	4.5	K	9.4	53.5	30.0		9.5	51.5	4.4		9.5	57 4.2	5.5	
9.4	33.2	41.9	B	9.2	18.4	52.3		9.0	30 11.5	6.1	B	8.2	52.6	32.1	R	8.4	58 16.8	0.3	L
9.5	39.6	42.0	B	9.5	11 17.8	47.0	B	9.5	21.8	0.6		9.5	53.2	15.2		9.1	22.5	12.1	
9.4	53.1	41.3		9.5	19.2	24.4		9.0	26.4	53.1	K	9.5	57.9	57.8	B	9.5	57.9	39.2	
8.5	59.9	56.1	K	7.5	39.4	59.9	K	9.5	28.7	55.5		9.5	43 15.3	16.5		8.8	59 20.8	0.1	K
9.3	56 14.6	54.6	B	9.4	51.5	21.4		9.1	38.0	18.9		9.5	16.5	3.3		9.5	25.0	22.3	
9.4	16.2	48.7		9.4	56.0	8.1		9.5	58.0	21.6		9.5	29.3	8.0	B	8.9	32.7	24.8	B
8.3	23.6	43.6	K	8.3	12 21.0	14.3		9.5	31 2.6	56.1		9.4	30.0	15.0		9.5	38.5	33.2	
9.5	37.6	49.0		9.0	35.5	54.7		8.9	18.7	8.9	K	9.5	34.5	29.7		9.1	0 7.5	52.7	
9.5	57 7.2	43.9		8.4	13 5.7	48.7		9.1	33.0	33.8	B	9.4	54.7	59.1		6.7	38.2	31.0	K
9.2	46.6	8.3	K	9.3	29.5	31.3		9.0	35.0	9.5	K	9.5	44 2.5	47.9		9.4	41.4	19.0	
9.1	58 19.1	24.4		9.5	41.5	6.6		8.8	38.2	9.6	K	9.5	6.8	11.0		7.8	59.9	32.3	K
9.2	19.9	12.5	K	9.5	50.6	22.1		9.1	53.6	46.4		9.4	13.6	5.4		9.2	1 8.4	57.5	B
9.3	43.7	51.6		9.0	57.7	34.6	B	9.5	32 6.3	55.3		9.5	45 0.1	52.8		9.3	26.9	22.4	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	8ᵘ	+29°			8ᵘ	+29°			8ᵘ—9ᵘ	+29°			9ᵘ	+29°			9ᵘ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	1 31.2	53.1		9.5	20 50.0	0.6		9.0	37 7.0	32.5		9.5	7 46.7	11.6		9.5	36 23.1	46.5	
9.5	38.8	50.5		9.5	21 31.2	5.9		9.1	18.3	28.7		9.5	8 8.7	36.4		7.4	26.1	22.4	K
9.5	41.7	8.0		9.5	33.8	49.7		7.5	52.4	17.6	K	7.0	9 17.3	11.3	K	9.2	48.0	22.4	K
9.5	2 13.8	37.8	B	9.1	42.5	26.6	K	4.2	55.3	16.3	K	9.2	25.0	6.5		9.2	37 33.0	31.6	
9.1	24.4	56.4	B	9.4	22 19.7	24.2		8.4	38 28.3	38.2		9.5	51.0	50.7		9.2	38 4.4	6.2	
9.1	31.2	10.7	B	9.5	41.1	15.0		8.8	39 17.6	15.7	K	9.5	10 38.9	3.4	B	9.5	39 15.5	57.2	
9.4	46.9	26.2		9.5	54.0	45.9		9.1	53.0	7.7		9.1	46.0	54.9	K	9.4	52.8	36.2	B
9.3	3 15.6	33.7		9.5	54.3	55.7		7.5	40 56.9	59.3	K	9.1	12 36.8	8.2	K	7.6	55.1	11.5	B
8.5	24.2	10.0	K	9.5	23 7.2	7.3		9.4	41 19.0	14.2		9.2	44.6	3.5		9.5	40 8.6	9.3	
9.4	31.6	28.8		8.5	22.7	57.9	L	9.5	42 47.3	51.7		7.8	13 9.0	7.4	K	9.1	43.7	55.1	
9.5	32.4	41.6		9.5	24.3	3.9		7.8	43 23.2	40.7	K	8.3	13.8	31.2		9.2	56.8	40.2	
7.8	39.4	13.8	K	7.5	24.3	48.3	L	8.0	30.5	23.5		9.4	47.3	20.2		9.5	41 1.6	11.2	
8.3	44.8	58.2	S	9.5	51.7	55.5		9.1	45.6	6.1		9.1	50.3	38.5		9.5	26.8	6.7	
9.5	59.0	11.4		9.5	24 15.6	48.3		9.5	54.7	49.7		9.4	15 41.3	26.8		9.0	42 49.5	36.1	
9.5	4 1.2	0.8		9.5	16.7	6.6		9.5	56.7	56.4		9.5	52.7	27.1		9.5	43 12.8	21.1	
9.3	19.0	58.8		9.3	35.7	56.4		9.0	44 0.8	0.5	S	9.0	16 29.3	53.7		8.6	40.8	56.6	B
9.5	28.9	24.8		9.5	43.9	49.0		8.5	20.9	13.3	K	9.3	34.0	54.5		9.5	41.8	53.1	
9.5	30.6	2.5		8.5	45.3	41.1	K	9.1	57.1	40.3		9.5	55.7	5.0		8.9	55.5	14.0	
9.4	5 28.9	38.2		9.5	25 4.5	33.9		9.5	45 15.3	2.4		8.7	56.8	29.5		9.0	44 19.1	40.6	
9.5	53.8	18.6		8.9	54.0	10.7		9.5	46 7.8	27.1		8.0	17 29.6	16.8	K	9.5	21.3	56.5	
9.5	6 25.1	16.3	B	9.5	54.3	21.4		9.3	9.8	20.6	B	9.5	39.3	15.1		9.0	21.6	51.0	
9.5	59.7	18.5		9.4	26 31.1	32.1		9.5	53.6	2.2		9.5	55.1	16.5		9.3	45 11.2	28.3	
9.5	59.8	49.0	B	9.5	52.8	54.4		9.5	47 7.7	29.4		8.2	18 47.7	52.6	K	9.0	17.1	52.4	K
9.5	7 0.6	33.4		9.3	27 11.9	32.2		8.8	29.5	28.6		9.5	19 48.0	26.6		8.5	39.0	52.5	K
9.5	18.4	50.5		8.0	32.3	11.5	K	8.4	39.3	12.8	K	9.0	21 23.0	27.1		9.5	40.0	42.3	
9.3	33.9	41.7		8.7	43.8	26.2	B	9.4	48 5.6	49.6		7.9	31.1	20.9	K	9.0	40.3	9.0	
9.0	54.8	47.2		9.1	28 5.3	29.0		8.8	21.4	46.1	B	8.8	56.7	45.7		9.5	48.0	52.4	
9.4	8 5.3	58.6		9.5	25.5	1.5		9.5	50 44.0	54.7		8.8	22 35.1	55.3	K	9.5	46 2.5	19.2	
9.3	56.8	37.0	B	9.5	37.7	34.8		8.0	51 4.4	33.9	K	9.5	41.3	20.9		8.0	14.6	22.9	K
8.0	9 18.4	31.7	K	9.4	54.7	45.2		9.5	20.7	36.4		9.5	23 45.9	34.6		8.9	29.8	42.3	
8.8	33.7	12.3		9.4	29 31.6	8.0		8.0	39.1	13.3	K	9.5	24 0.0	18.5		9.2	47 40.4	46.9	B
9.5	55.5	6.6		9.4	52.3	3.5		9.1	52 6.3	38.1		9.5	17.8	58.4		9.3	52.1	22.0	
9.5	11 7.0	7.0		9.2	55.0	31.1		9.0	16.7	48.1		7.0	49.0	0.6	K	8.9	48 32.6	44.7	
9.5	9.3	25.8		9.3	55.7	26.6		9.3	55.7	31.8	B	8.8	58.2	31.0		9.0	34.5	7.4	
9.3	27.3	58.5	B	9.2	30 18.3	11.2		9.5	53 20.3	59.6		9.5	26 55.7	1.0		7.5	53.5	14.8	K
9.3	43.9	44.2		9.2	33.8	28.3		9.4	38.0	46.3		9.5	27 40.0	7.2		9.0	59.7	47.1	
9.5	12 8.0	21.8		8.6	31 2.3	0.3	K	8.8	42.7	40.5		9.3	58.0	6.2		8.3	49 6.0	50.9	K
9.5	29.4	27.0		8.4	14.0	47.3	K	8.2	58.2	56.7	K	9.3	28 5.1	12.7		9.5	34.6	2.6	
8.3	39.7	15.3	R	9.4	15.4	26.3	B	8.7	54 38.5	57.2		9.2	5.4	33.1	B	8.6	50 0.1	16.7	K
9.5	57.5	52.5		9.5	30.0	1.1		8.0	55 41.4	51.2	K	9.5	5.9	53.8		8.8	5.9	10.8	K
9.5	13 23.0	29.7		9.4	37.0	13.7		9.0	42.6	16.3	B	9.5	24.0	17.5		9.3	15.3	25.7	
9.5	28.6	58.2		9.3	51.4	12.8	B	9.5	56 6.0	47.0		9.5	35.5	38.8		9.3	38.8	51.3	
9.5	45.5	52.7		8.5	55.8	4.9	K	9.3	6.9	17.8		9.5	50.1	54.7		8.8	51 17.6	38.8	K
9.5	14 53.0	29.3		8.6	32 3.7	42.1	K	9.5	38.1	48.0		9.0	30 19.2	36.3	B	9.3	39.1	27.5	
9.4	15 6.3	42.8		9.5	17.6	39.4		8.5	58.5	16.8		9.5	23.1	3.8		9.3	46.6	56.0	
9.4	13.8	53.6		9.0	32.7	23.8	K	9.5	57 25.3	27.4		9.0	31 34.9	19.3	K	7.2	52 57.7	28.7	B
8.6	25.0	12.2		9.0	37.1	20.5	K	9.5	34.2	33.6		9.3	36.7	2.7		8.6	53 11.7	15.4	K
9.2	16 8.7	1.5		9.5	37.9	54.1		9.5	58.5	25.0		9.5	44.0	51.9		8.5	19.6	12.6	K
9.5	40.4	4.7		9.3	33 9.0	51.0		9.4	58 34.3	38.8		9.5	32 9.5	1.4		9.5	56 49.6	27.2	
9.5	50.5	53.1		9.0	10.3	24.5	K	9.4	59 28.6	42.6		9.4	32.2	58.4		8.5	57 20.7	25.6	K
9.5	53.7	5.3		8.7	20.0	11.2	K	9.5	0 51.7	39.5		9.5	54.1	13.0		9.0	23.4	19.9	K
9.4	17 7.3	2.2		9.5	21.5	24.5		9.0	1 40.7	20.8		9.5	33 11.1	59.2		9.5	24.8	59.5	
7.7	14.4	5.9	K	9.4	21.5	49.3		9.5	45.7	51.2		7.8	15.1	31.7	K	9.4	37.5	41.6	
9.4	18 21.3	22.8		9.5	30.8	46.7		8.0	54 4	39.5	K	9.5	30.4	28.1		9.5	58 11.9	14.6	B
8.8	58.8	33.1	K	9.0	34.3	58.3	K	9.2	2 1.5	20.1	B	9.4	33.0	32.1		9.5	23.0	0.2	
9.4	19 27.4	56.9		9.2	35.2	45.5	B	9.0	4.3	5.0		8.4	39.1	22.1	K	9.5	27.0	9.6	
9.4	46.3	34.5		8.8	53.0	54.3	K	9.4	13.1	10.6		9.5	34 51.1	2.5		9.5	29.0	35.3	
9.0	20 20.1	2.6	K	9.1	34 49.1	45.8	K	9.3	45.1	59.0		9.2	35 36.7	53.6		8.9	38.9	37.2	
8.0	21.5	58.0	K	8.8	36 19.9	8.1		8.0	3 18.4	27.8	K	8.5	48.0	27.8	K	9.0	40.9	11.9	B
9.3	29.8	49.7		8.5	44.0	46.6	K	9.5	5 32.6	36.0		9.3	36 6.6	13.0		8.0	55.8	57.0	

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	9ʰ—10ʰ		+29°		10ʰ		+29°		10ʰ—11ʰ		+29°		11ʰ		+29°		11ʰ—12ʰ		+29°	
m	° ′ ″		′		° ′ ″		′		° ′ ″		′		° ′ ″		′		° ′ ″		′	
9.1	59	42.4	27.9		25	22.0	37.3	K	57	21.8	19.0		26	29.0	20.8		51	32.2	49.2	
9.1		46.7	57.7		27	35.6	51.4	K		35.8	46.5	K	27	15.1	25.6			46.3	33.6	
9.5	0	19.1	47.5		9.3		46.5		59	2.0	10.9	K		48.3	57.7		52	22.9	22.9	K
9.5	1	16.6	24.1		9.5		49.7		0	33.3	52.3		28	9.8	39.7		53	13.4	53.9	
9.5		38.7	2.8		9.5		56.0		9.0	39.3	3.8	K		24.6	15.9			21.2	59.9	L
8.8	2	4.0	6.0		9.4	29	22.5	59.2	9.0	53.8	48.6			41.8	16.4	B		46.6	33.6	
9.4		4.9	50.4		9.4		24.9	2.5	9.1	1	18.3	59.2	29	46.8	41.3		54	55.3	58.5	K
9.5		40.7	17.5	B	9.1		31.0	52.4	9.1		32.6	4.3	30	14.1	17.5	B		57.9	10.8	B
9.4	3	32.2	33.0	B	9.5		58.6	54.0	9.4	2	12.6	27.5	B	27.8	31.1		55	32.9	54.2	
9.3		52.1	36.4		9.5	30	55.3	16.0	B	9.1		21.4	43.4	K	55.3	6.7			50.4	50.0	
9.4	4	26.4	3.9		8.7		58.9	57.1		9.5		34.0	24.0		9.3		56.5	17.6	B	8.0		52.7	55.9	K
8.3		53.6	0.4	K	9.1	31	17.1	3.8		9.4	3	28.1	52.8		9.5	31	21.1	9.3		7.8	58	6.3	19.4	K
9.4		54.1	58.1		8.1		26.5	30.3	K	9.4		48.8	6.5	B	9.3	32	15.3	11.5		8.3		11.6	5.7	K
9.1	5	9.3	27.1	B	9.2		37.8	7.1		9.5		50.4	56.0		9.5		27.9	54.7		8.9		31.2	46.3	
8.5		54.6	23.4		9.4	32	0.8	8.0		9.5	4	48.3	26.6		9.5	33	24.8	15.3		9.2	0	7.9	28.4	
9.0		55.7	49.3		9.4		9.4	2.1		9.5	5	30.7	4.5		9.0	34	2.3	39.6		9.5		17.4	50.8	
8.5		56.8	5.7	K	8.6		42.1	44.3		9.5	6	7.4	54.6		9.3		28.1	6.5		9.5	1	10.9	38.5	
9.3	6	4.0	29.2		8.2	33	8.6	19.2	K	9.5		15.8	44.8		9.2	35	19.8	20.4		8.8	2	4.8	0.7	K
9.1		39.1	9.2		9.2		12.7	0.2		9.5	7	7.3	48.5		9.5		33.3	42.7		9.0		27.8	43.7	L
9.5	7	58.6	32.6		9.3		33.9	58.5		8.8	8	0.4	13.6		9.5		38.1	58.7		9.4		33.7	42.3	B
6.8	8	14.1	23.4	K	9.1		35.0	35.8	K	9.5		8.3	5.0		8.3		56.2	49.4	K	9.3		58.8	7.3	
9.2	9	9.5	9.1		9.5		53.8	1.5		9.5		30.2	50.2	B	9.1	36	21.8	57.6		9.4	3	0.9	3.5	
9.5		14.0	13.8		8.2	34	17.0	46.4	K	9.5		45.6	2.5		9.3		59.4	56.4		7.2		7.4	52.2	K
9.5		18.6	21.0	B	8.0		52.0	34.4	K	8.6	12	12.8	35.9	K	9.2	37	4.8	14.0	B	9.0		51.9	55.0	
9.4	10	16.5	22.8		9.5		56.0	6.8		9.1		12.8	40.3	K	9.5		8.2	11.7		6.7	4	38.4	20.9	K
9.5		51.1	19.1	B	9.5	35	25.3	34.3		9.5		22.1	11.3		7.0		9.8	27.9	K	9.5	5	10.5	11.4	B
9.3	11	49.0	33.0		7.9		28.7	27.4	K	7.5		23.6	7.0	K	9.4		16.5	13.9	B	7.9		42.9	26.3	K
8.6		49.9	8.9		9.5	38	29.8	24.3		9.5		24.1	13.8		9.3		40.8	24.0		8.5	6	33.8	6.1	L
8.8		53.0	57.3		9.5		45.8	4.3		9.5	14	8.8	32.5		9.1	38	14.3	23.5	K	8.4	7	31.7	26.3	K
7.3	12	26.8	39.9	K	8.8	39	18.4	4.4		9.5		41.6	1.5		8.5		24.8	28.7	K	9.3		58.2	54.5	
9.3		27.5	1.8		9.2		20.5	12.3		9.4	15	1.4	26.2		9.5		41.3	52.0		9.0	8	30.3	36.3	L
9.4		37.5	14.7	B	9.5		28.8	57.3		9.5		12.0	8.8	B	9.5		42.1	4.1		8.9		56.3	38.8	L
7.9	13	17.2	15.7	K	9.1	41	51.7	25.0		8.0		56.5	30.8	B	9.0	39	13.4	40.0		9.5	9	20.1	5.2	
9.5		23.8	54.6	B	9.5	42	44.7	27.7		9.5	16	31.8	4.0		6.8	40	53.3	13.6	K	8.5	10	1.1	32.1	K
9.4		39.2	59.6		9.5	43	8.6	8.1	B	8.5		48.3	34.8	K	9.5	41	3.0	4.8		5.8		14.0	45.2	K
9.0	14	22.6	46.1		9.1		14.4	15.4	K	8.5	17	18.9	44.1	K	6.8		3.8	36.4	K	9.4		41.3	27.2	
9.5		30.0	2.1	B	9.5		27.7	45.7		9.0		34.3	47.9	K	9.5		46.4	20.8		9.4		43.0	49.4	
9.3		50.1	26.1		9.5	44	10.7	12.0	B	9.3		42.4	14.3		9.4	42	11.1	50.1		9.5		58.7	46.5	
9.4		53.5	39.2		9.4		18.8	47.4		9.0		52.3	43.8	K	9.5		17.3	35.5		9.5	12	11.3	11.1	
9.2	15	19.0	53.4	B	9.5		49.0	10.1		7.2	19	14.3	13.6	K	9.5	43	43.3	25.2		7.0		35.0	15.9	K
9.5		23.0	59.3		9.5	45	17.4	42.3		9.5		16.8	55.1		9.5		52.3	44.6		9.5	13	40.7	9.7	
9.3		53.5	45.1		8.6	46	33.1	40.9		9.1		30.4	1.5	K	9.5	44	12.3	50.6	B	9.5	14	36.7	22.4	
9.4	16	19.3	19.6	B	9.5		36.6	17.4	B	9.5		40.8	30.0		9.3		49.7	6.4		9.5	15	42.2	8.3	
9.5	17	10.1	15.0		9.2	47	22.3	1.1		9.5	20	2.4	29.7		9.5		50.8	54.1		9.1	16	56.4	12.6	B
9.3	18	33.7	47.9		9.3		25.8	23.8		9.5		34.3	37.2		8.4	45	14.1	13.5	K	9.4	17	3.8	8.3	
8.5		38.7	6.6	K	9.5	48	31.8	36.1		9.1	21	34.0	38.2		9.0		38.3	19.0		9.4		10.7	56.5	
9.4	19	23.0	48.3	B	9.5		56.0	5.6	B	9.5		37.7	9.3	B	9.5		51.5	57.7		9.1	18	8.2	26.3	
9.1		29.7	9.7	B	8.8	49	10.3	43.4	K	9.1	22	1.8	46.1	K	9.5	47	25.9	32.8		4.7	19	43.7	4.9	K
9.4		57.3	57.7		9.5		12.0	26.3		9.4		26.0	8.3		9.0		45.4	19.7		9.5	20	21.8	45.4	
8.9	20	6.7	7.3	K	7.8	52	53.1	59.8	K	9.4		27.3	10.4		9.5	48	17.4	17.7		9.1		32.2	0.1	K
9.4		26.1	44.2	B	9.5	53	5.0	36.2		9.5		30.0	27.0	B	9.1		22.8	14.7	B	9.4	21	9.3	32.4	
9.4		30.2	9.0		8.8	54	3.8	18.3	K	9.5		57.3	46.2	B	9.5		35.1	55.3		8.5		43.7	41.4	K
9.5		48.3	42.0		9.1		52.2	7.8		9.5	23	5.1	41.9		9.3		40.3	15.2		9.0		54.7	5.3	K
9.5	21	10.0	48.2		9.5	55	5.1	57.2		9.3		9.8	34.8		7.0		46.5	40.2	K	9.0	22	58.8	12.2	
9.4		22.0	29.2	B	9.2		15.4	46.3	B	9.5		12.3	8.0		9.5	49	20.2	21.3		9.5	24	24.2	31.0	B
8.0		39.5	16.4	K	7.0		17.3	43.1	K	6.8		14.6	14.9	L	9.5	50	0.8	5.7		9.0		24.3	13.5	
7.0		46.5	19.2	K	9.0	56	31.4	8.0		8.8		52.8	48.2	K	7.8		7.6	21.9	K	9.4	26	2.6	53.8	B
9.0	22	43.6	23.3		9.0		37.1	19.7		9.3	24	25.5	38.7		9.5		31.7	57.6		9.5		14.1	46.8	
9.5	23	33.8	55.7		9.4		37.4	46.9	B	7.5		44.3	51.7	K	9.5		48.9	25.0		9.5	27	9.2	17.3	
8.8		49.6	23.7		8.0		42.4	57.7	K	9.4	26	0.4	41.7		9.5		51.1	48.0		9.0		12.1	7.6	K

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	12ᵘ	+29°			12ᵘ—13ᵘ	+29°			13ᵘ	+29°			13ᵘ—14ᵘ	+29°			14ᵘ	+29°	
m	′	″ ′		m	′	″ ′		m	′	″ ′		m	′	″ ′		m	′	″ ′	
7.8	27	39.7 53.1	K	9.5	56	47.0 24.9		8.8	24	31.0 42.8	K	9.5	52	36.8 39.7		9.5	23	53.8 42.1	
9.4		49.0 58.4		9.2	58	16.0 9.9	K	9.5		58.6 57.7		9.0	53	40.0 8.7	K	9.2		54.0 14.6	K
7.6	28	17.7 38.0	L	9.0		59.2 43.4	K	8.5	25	18.4 19.8	L	7.5	54	46.7 6.0	K	9.5	25	13.7 52.8	
9.5		20.8 57.6		8.9	59	3.3 2.0		9.5		56.7 34.2		9.4	56	53.0 20.7		9.4		21.0 30.2	B
8.8		42.7 29.1	L	6.8		16.7 49.3	K	9.5		58.1 3.1		9.3	57	37.9 35.1	K	9.0		39.3 15.6	
9.1	30	19.9 1.0	K	9.5		28.0 3.6		9.3	26	5.4 39.0		8.0		58.5 49.5	K	9.3		55.6 45.8	
8.1		30.8 25.6	K	9.5		38.8 38.1		9.3	27	5.7 53.8		9.0	58	23.2 56.9		9.1	26	5.3 23.1	
8.5	31	23.7 23.3	K	9.0		52.7 23.1		9.5		28.0 19.4		9.0		23.9 44.1	K	9.5		16.4 7.1	
9.1		30.9 44.2	B	8.3	0	13.3 29.3	L	9.5		32.5 9.4		neb		54.4 12.8		9.5	27	12.3 4.9	
9.3		32.5 33.3		9.4		19.9 31.8		9.3		34.5 14.4	B	9.1		54.5 34.8	K	8.6		26.7 45.8	K
9.5		43.8 59.8		9.5	1	7.2 15.9		8.3		56.4 34.5	K	9.4	0	10.6 11.7		9.0		30.4 22.1	
9.3	33	0.2 2.4	K	9.2		11.0 33.0	K	8.5	28	32.3 53.1	K	9.3		11.5 33.7	B	8.9		37.0 29.5	
9.3		4.3 2.0	K	8.5	2	16.1 27.3	B	9.3		44.0 16.3		7.0		26.0 7.3	L	8.1		56.3 7.1	L
9.5		52.9 58.9		8.5	3	3.7 35.5	K	9.4	29	32.6 27.1		9.5		27.3 32.4		9.5	28	3.9 32.0	B
9.5		57.2 10.1		8.6		53.2 18.7		8.9		57.5 31.1	B	8.9		34.3 57.8	K	8.0		24.1 1.3	K
9.0	35	7.7 25.2		8.8		56.8 26.3		8.6	30	12.0 14.2		9.4	1	9.9 55.3		9.5		49.4 8.0	B
9.3		22.8 53.2		9.5		57.2 45.6	B	9.5		13.4 26.3		9.5		18.7 15.5		9.0	30	16.2 7.0	K
8.6		30.0 57.6		8.4	4	0.2 7.9		9.5		33.2 26.3		9.0		58.9 50.8	K	9.5		47.7 56.5	
7.5		32.2 10.4	L	8.5		36.7 38.3	K	9.5		34.2 22.0	B	8.8	2	2.5 39.5		9.5		48.6 24.9	
8.0	37	40.1 38.3	L	9.3	5	57.2 43.3	K	9.2	31	4.7 3.5	K	9.3		18.3 53.4	K	8.9		59.0 8.3	K
9.2	38	15.2 29.0	K	9.4	6	14.9 24.3	B	9.5		58.6 59.0	B	9.5		50.0 41.0		9.2	31	17.8 39.0	
9.2		22.8 24.8	K	9.1		32.4 5.4		9.5	32	3.0 55.2		9.3	3	38.1 4.8		9.0	32	8.3 33.2	K
9.0		28.8 36.9	L	9.2		39.9 25.6		9.1		21.7 46.6	K	9.2		49.0 50.8	K	9.5		19.3 58.7	
9.3		59.8 29.3	K	9.5	8	33.4 15.5		9.0	33	11.5 5.1	B	9.4	4	38.2 35.8		9.3	33	42.1 6.9	B
8.8	39	0.3 46.3	L	7.5		45.0 30.8	K	9.3		18.2 21.5	B	7.2	5	59.4 25.0	K	8.2		51.0 2.4	K
9.5	41	49.2 57.0		8.2	10	6.7 49.3	K	8.2		35.7 46.9	K	9.1	7	5.0 40.1		8.2		59.2 36.6	R
9.5	42	5.0 15.6		9.5		31.2 26.2		9.2	34	25.4 27.5		9.5		24.5 35.7		9.5	35	1.8 50.8	
8.9		41.6 56.7	K	9.5		54.0 36.2		9.1	35	4.9 11.3	K	7.0		26.5 48.3	K	7.8		7.2 41.7	K
8.8	44	13.8 8.8	K	8.8	11	36.1 13.2		9.4		5.1 30.0	B	8.0	8	3.3 45.7	K	9.5		55.4 19.7	
8.4		17.8 39.0	K	9.5	12	4.0 40.0		neb		29.1 6.7	K	9.0		26.5 42.0	K	8.1	36	37.2 43.1	K
8.9		30.7 36.2	B	7.5		13.0 20.7	L	9.5		32.6 55.7		8.6	9	0.2 16.7	K	9.5		46.4 24.5	
9.4		54.0 39.4		9.5		56.5 3.2		9.5		47.5 16.6		9.1		30.8 10.9	K	9.5	37	10.0 58.1	
8.5	45	24.7 38.2	K	9.5	13	15.2 27.0		9.5	37	17.5 23.3		9.3		37.9 53.2		9.3		18.4 47.1	B
7.7	46	13.7 47.6	K	9.4	14	8.4 24.2		8.1		51.6 43.0	K	9.4	10	2.0 39.0	B	9.5		35.5 47.0	B
9.5	47	15.0 59.6		9.5		29.7 35.7		9.3	38	16.6 46.4	K	8.6		7.5 21.0	K	9.0	39	8.4 47.3	L
8.9		16.2 13.8		9.5		37.7 54.5		9.4	39	13.9 9.3		9.1		17.5 36.1	K	9.5		57.0 49.6	
9.1		17.8 33.5		9.4		45.3 44.4	B	9.5	40	34.0 21.6		9.5		32.1 32.9		9.5	40	17.3 31.4	
9.1		41.0 45.9		9.5		47.8 54.0		9.5	42	50.2 42.6		9.2		44.0 13.2	B	9.5		57.3 8.7	B
9.0	48	2.2 31.4		9.5	15	34.2 48.3		9.0	43	19.9 47.9	K	9.4	11	13.6 50.0		9.5	41	14.5 29.7	
8.0		2.3 1.9	L	8.9		35.4 53.8		9.0		26.2 52.1	K	9.5		26.5 27.3		9.5	43	41.9 38.6	
9.4		5.2 47.2		9.0		43.2 16.3		9.5		59.1 2.5		9.2		33.9 22.0	K	6.2		43.0 12.8	K
9.5		17.5 53.2		9.2		59.0 37.9	K	9.4	45	38.2 49.5		9.1		38.8 58.2	B	9.5	44	11.0 35.8	B
9.3		56.8 53.8		8.8	16	9.7 16.0	L	9.5	46	6.3 54.4		9.1		41.5 2.5	K	9.5		28.4 56.4	
9.2	49	33.1 56.1		8.8		15.4 49.7	K	6.0		35.5 22.0	K	7.3	12	7.8 6.0	L	9.4		45.0 29.6	B
9.0	50	37.3 13.2	K	8.6		50.2 58.8	K	9.1		41.9 21.0	K	9.5	13	19.6 45.6		9.1		57.1 20.6	B
9.0		38.5 46.6		9.3	17	36.0 30.4		9.5		48.3 58.0		9.0		50.2 9.9	B	9.5	45	4.6 10.9	
9.0		40.8 36.6	K	9.4	19	32.5 23.2		9.0		55.0 21.4	K	9.5		57.0 53.9		9.4		11.4 24.3	B
7.0	51	35.7 6.7	L	8.0	20	25.0 38.3	K	9.5	47	11.0 45.0		9.2	17	46.0 9.4	K	9.4	46	3.6 28.6	
9.5		56.9 27.0		8.7	21	17.7 11.8	K	9.5		13.9 29.3		9.0		46.3 50.1		9.5		19.2 9.6	
8.1	52	35.8 1.3	K	8.0		54.3 12.1	K	9.2		20.3 54.6		9.0	18	34.4 15.3	K	8.3		27.6 51.3	K
8.9		53.0 25.5		8.2	22	2.4 2.3	L	7.8		33.5 2.8	K	9.5		34.8 42.5		9.2		46.1 3.8	
9.3	53	16.3 26.6		9.2		15.7 57.2	K	9.1	49	29.2 53.0	K	9.5		45.8 39.5		8.0		59.6 5.9	K
9.5		27.2 13.5		9.4		28.8 32.5	B	7.0		30.9 23.1	K	9.2	19	41.6 52.6	K	9.5	47	15.5 4.5	
9.1		42.3 18.0	K	9.5		29.2 36.5		9.5	50	3.9 7.5		9.0	20	11.7 46.6	K	9.5		42.1 49.9	
9.3	54	33.2 24.6		9.5		56.3 37.5		8.7		6.2 2.1		7.5		30.3 13.9	K	9.4	48	24.6 36.8	
9.5		57.8 58.3		9.2	23	1.5 23.2	K	9.5		40.5 45.4		9.1	21	18.4 21.2		9.5		41.4 7.3	
8.0	55	8.7 46.6	K	8.3		31.0 19.4	K	9.2		45.7 29.9	K	9.4		23.0 16.0		9.2		57.6 38.4	B
9.1		31.8 44.3	K	9.5	24	2.7 20.8		9.5	51	47.8 2.0		7.2		40.0 55.4	K	9.3	49	44.2 51.3	
9.1	56	18.7 23.1		9.2		25.4 25.9	K	9.4	52	20.0 41.4		9.3	22	53.5 19.0	K	9.0	50	15.4 14.4	
8.5		39.3 13.8	L	9.3		29.5 7.9		9.3		27.4 36.9	B	9.3	23	5.0 54.5		8.8		21.0 8.4	K

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	14ᵘ—15ᵘ	+29°			15ᵘ	+29°			15ᵘ—16ᵘ	+29°			16ᵘ	+29°			16ᵘ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	50 36.2	17.5		9.3	17 26.7	25.5		9.5	45 3.5	42.5		9.2	3 31.9	24.7		9.2	25 18.0	45.8	
9.3	51 47.1	48.2		9.5	19 0.2	46.9		9.5	24.4	5.4		9.4	55.8	53.6		9.4	25.9	38.4	B
9.4	52 22.1	49.5		8.6	3.9	39.9	K	9.5	31.4	54.9		9.5	4 0.0	35.4		9.4	29.7	31.4	B
9.1	24.0	17.2		9.0	59.8	49.0	L	8.8	34.5	47.6		8.8	5 3.7	30.2		8.0	55.7	55.0	L
9.5	53 12.0	26.6		9.5	20 5.7	59.9		9.0	36.2	38.3	K	9.5	5.0	36.8		9.2	56.3	20.4	B
9.5	24.0	42.3		9.5	16.0	35.9		9.2	46.0	24.0		9.5	28.9	31.6		8.9	26 32.6	2.4	K
9.5	40.0	57.8		8.3	44.1	10.3	K	8.3	46 4.1	4.9	B	9.5	59.2	18.8		8.7	35.6	25.7	
9.5	54 4.5	37.5		9.3	21 24.7	19.3		8.8	11.7	30.0		9.5	6 39.9	49.7		9.5	27 15.3	49.6	
8.0	35.6	9.3	L	9.5	44.7	0.5		8.0	25.8	2.2	K	9.5	50.4	48.0		9.5	31.6	14.4	
9.4	55 10.6	53.1		4.0	53.2	36.5	K	7.8	36.0	20.6	L	9.4	7 41.7	9.1		9.1	34.9	6.9	K
9.4	51.1	15.1	B	9.4	22 20.6	1.5	B	9.4	47 4.7	7.9		9.5	56.0	53.6		8.8	29 55.6	27.5	
9.0	56 1.5	38.7	K	9.5	23 15.2	17.5		9.5	19.8	7.9		7.5	57.6	6.8	K	9.5	59.3	57.9	
9.5	17.9	9.7		9.5	48.5	56.7		8.3	28.2	1.8	K	9.5	8 19.3	38.6	B	9.3	30 2.1	16.4	
8.8	57 8.5	53.9		9.0	49.2	26.5		8.1	38.7	53.9	K	9.4	20.5	16.8		9.4	12.4	51.7	B
9.5	24.7	6.1		9.5	24 8.0	5.2		9.5	58.4	12.7		9.5	32.6	38.7	B	9.5	31 12.5	22.5	B
9.5	36.2	18.6		8.8	26.8	5.9		9.2	48 20.5	51.5	K	9.5	58.6	4.5		9.5	14.3	21.7	
9.0	59.0	56.2		9.0	27.2	48.6		9.5	24.0	34.6		9.4	9 2.2	24.4		9.3	22.1	31.9	
7.8	58 8.7	37.2	K	9.5	25 46.8	32.2	B	9.5	59.4	4.8		9.0	14.5	45.4		7.6	51.1	7.9	K
9.5	30.3	51.3		9.2	55.2	45.5		7.2	49 35.1	57.0	K	8.3	10 19.4	57.9	K	8.7	32 18.9	47.0	K
9.5	59 10.8	48.0		8.7	26 41.2	10.0	L	9.4	55.5	36.4		9.4	31.4	52.2		7.9	34.9	57.6	K
8.0	58.7	33.4	L	9.0	27 8.7	50.6		9.5	50 51.8	6.7		8.6	38.2	16.1		9.0	42.1	57.0	K
8.5	0 2.8	59.1	K	8.5	41.3	47.1	K	9.5	51 8.0	40.2		9.0	38.5	50.0		9.4	33 4.5	52.1	
9.5	3.0	47.7		9.5	28 27.5	55.5		9.5	54.2	55.2		5.7	55.7	30.9	K	9.1	15.0	7.2	K
8.4	17.2	45.9	L	9.0	32.6	36.8	K	9.5	52 4.9	43.2		9.5	11 6.4	32.2		7.3	42.1	30.1	K
9.2	19.8	9.6		9.3	29 27.3	50.6		8.9	30.4	58.6	K	7.5	22.7	47.0	K	9.2	34 20.2	16.4	K
8.7	20.2	32.7	K	8.9	35.0	11.1	L	9.3	37.0	47.0		9.4	43.7	59.5	B	9.3	28.1	11.1	
8.0	51.7	12.4	K	9.5	30 12.4	40.7	B	9.5	38.0	41.0		9.5	53.1	59.4	B	7.9	57.2	11.3	K
9.0	1 39.6	8.4	K	9.4	31 20.0	10.2		7.0	53 14.4	51.5	K	9.5	12 0.8	53.5		9.4	35 59.4	4.6	
7.3	51.0	4.5	K	9.4	56.6	3.5		9.5	30.5	15.5		9.4	6.4	1.2		8.7	36 4.4	42.5	K
9.4	52.8	43.4		9.4	32 5.7	56.7		9.5	54 40.3	9.1		9.5	27.0	46.7		9.5	16.0	5.3	
9.5	3 5.5	24.3		9.3	57.2	35.4		9.1	52.2	58.3	B	9.5	37.7	55.9		9.5	51.3	57.5	B
9.2	38.6	38.8		9.5	33 28.7	30.0		8.2	55 5.2	21.3	K	9.4	14 59.9	55.7		9.5	37 9.3	54.8	
7.3	48.7	47.1	L	9.5	29.2	53.4		8.9	13.0	7.1		8.7	15 21.5	15.8	K	8.8	16.7	0.7	K
9.5	5 15.4	3.4		8.0	40.0	40.0	K	8.9	29.6	1.3		8.5	24.9	52.5	K	8.9	18.0	34.3	
9.5	30.1	5.4		9.5	49.7	36.1		9.1	31.8	11.1		9.5	32.4	3.1		8.7	45.6	14.0	K
9.1	6 33.2	36.4		9.4	34 18.2	44.0		9.4	38.5	16.6		8.5	33.2	20.3	K	8.5	39 16.1	44.3	K
9.1	7 22.3	58.5		9.1	39.8	56.2		9.5	56 48.0	33.6		9.5	16 11.0	6.8	B	9.3	37.3	2.2	
9.5	24.7	16.1		9.5	52.2	53.6		8.5	57 4.4	21.9	K	9.5	17 27.0	37.7	B	9.0	40 11.9	57.5	
9.4	8 3.1	16.4	B	8.4	35 4.4	41.5	L	9.5	18.5	38.4		9.4	50.5	52.2		9.4	50.2	38.4	
5.5	28.4	43.4	K	9.1	27.8	4.9		9.0	19.5	14.3	K	9.5	55.9	27.8		9.5	41 18.3	58.7	
8.8	9 13.2	27.1	K	8.9	36 43.5	56.6		9.2	34.2	30.4	L	7.5	18 16.9	58.1	K	8.3	18.9	29.1	
9.3	19.0	57.6		9.5	38 10.0	48.8		9.4	37.6	2.2		9.5	44.8	1.4		8.8	41.4	46.5	
8.7	45.7	51.3	L	9.4	36.8	26.2		9.3	58 13.0	24.7		9.5	58.5	38.9		9.5	42 19.1	37.7	
9.5	10 19.6	7.8		9.2	42.6	39.2	B	9.5	18.5	51.8		8.9	19 19.0	35.1	B	9.5	38.5	4.4	
9.4	47.0	2.3		9.0	54.2	17.1		9.5	59 8.4	54.9		9.5	30.7	27.8		9.5	43 33.2	59.2	
8.8	52.9	1.3	K	9.5	39 24.6	7.5		9.2	43.8	56.4		9.5	56.9	11.2		9.4	52.2	3.0	B
9.1	59.4	32.7		8.5	48.3	25.1	K	9.3	0 0.7	24.1		9.2	57.8	5.5	K	9.5	44 20.6	24.4	
8.7	59.7	22.4	L	9.5	55.9	55.7		9.4	0.9	3.4		9.5	20 9.0	19.1		8.8	46.5	10.2	K
9.0	11 29.7	29.0	L	9.4	40 17.0	3.8		9.5	48.4	12.6		9.5	34.5	15.8		8.1	45 31.0	49.7	K
9.1	12 9.2	55.4		9.3	33.0	40.2		9.3	56.0	37.1		9.0	55.4	10.1	K	8.9	56.1	7.4	
8.7	18.3	10.5	K	9.5	48.4	59.3		9.3	1 16.9	32.2		9.3	58.7	8.2		9.3	46 10.2	56.4	K
9.5	36.5	56.2		9.3	54.3	21.6		9.4	26.5	40.9		9.3	22 23.9	40.5		9.2	47 36.3	29.8	K
9.5	13 13.2	23.0		8.3	41 12.7	33.0	K	9.2	45.8	25.1	B	8.4	26.4	59.8	K	9.2	37.1	43.9	K
9.5	20.2	43.0		9.5	42 4.4	50.0		7.5	47.6	23.1	K	6.8	45.9	23.6	K	9.2	45.2	37.2	
9.1	14 12.7	56.1		9.1	26.3	41.2		8.6	56.4	32.9	K	9.1	24 2.5	23.3		8.9	52.7	46.5	K
8.7	16.2	46.8		9.5	43 0.5	11.2		8.7	2 3.5	46.3		9.5	33.8	58.7		8.7	48 17.6	21.2	L
9.4	16 7.6	47.1	B	9.2	4.4	5.0		9.3	16.4	59.3		9.1	35.0	15.1		9.3	23.5	16.8	
9.5	37.7	6.5		9.0	16.5	0.8	K	9.4	34.0	52.0		9.5	37.9	22.7		9.3	34.5	52.5	K
9.3	17 7.2	40.7		9.5	34.0	11.6		9.5	40.0	55.6		9.3	25 6.1	21.6		9.5	48.7	3.1	
8.9	14.7	33.4	K	9.4	44 3.2	6.4		9.2	3 12.0	50.8	B	8.5	9.4	31.2	B	9.4	57.7	2.3	

2901—2960					2961—3020				3021—3080				3081—3140				3141—3200			
	16ᵐ—17ᵐ		+29°			17ᵐ	+29°			17ᵐ	+29°			17ᵐ	+29°			17ᵐ—18ᵐ	+29°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	49	12.1	27.4		9.5	7	45.6	58.9	9.5	22	35.3	48.8	9.5	34	43.4	0.3	9.1	48	44.5	33.3	K
7.3		19.6	16.7	L	9.1		51.7	28.2	B	9.5		39.7	44.7		8.3	35	16.0	44.8	L	9.2		51.1	34.0	
9.5	50	11.3	52.1		8.5	8	33.7	45.2	L	9.5		45.5	50.6		9.2		31.9	16.3	K	9.5		53.6	5.5	
9.5		43.1	15.1		9.5		53.3	8.6		9.5		47.5	49.3		9.2		32.5	11.4		9.5	49	31.0	37.5	
8.3	51	9.9	49.3	L	9.3		57.2	24.3		8.8		47.7	57.5	K	9.2		57.2	20.7	K	9.5		34.5	5.3	
8.9		15.1	19.9	K	9.4	9	5.5	42.5		8.9		55.1	57.5	K	9.2	36	0.5	26.5	K	9.5		41.1	17.1	
9.5		18.0	28.5		9.5		31.8	52.5		8.8	23	25.9	9.4		8.1		2.6	40.6	L	9.5	50	31.5	46.0	
9.2		25.1	40.8		9.5		37.9	5.5		9.0		39.0	31.5		9.5		4.0	5.2		9.5	51	4.3	17.1	
9.2		30.6	15.4	K	9.5		49.2	51.4		9.1		44.8	31.1		9.2		40.3	30.9	K	9.0		7.0	30.2	S
9.5		53.5	6.0		9.5		56.3	5.0		9.0	24	12.3	15.6		9.5		54.0	2.0		9.2		18.5	31.2	
9.5		58.6	34.6		8.5		57.0	38.3	K	9.5		33.5	16.4		6.5	37	0.0	29.6	K	9.2		32.5	33.7	
9.2	52	39.1	25.7		9.5	10	24.2	24.3		9.3		35.5	8.1		9.2		10.2	40.3		9.5		39.4	5.8	
9.5	53	14.8	4.5		9.5		30.7	42.1		7.9		38.0	37.6	K	9.5		17.6	27.3		8.7		59.5	30.2	S
9.5		42.9	23.1	B	9.5		45.8	19.8		9.5	25	18.7	34.9		9.1		19.3	18.0	B	8.8	52	5.5	29.8	
7.7		55.3	46.2	B	9.0	11	1.3	35.7		9.2		25.8	46.0	K	7.8		24.2	43.4	K	8.8		5.9	25.9	B
9.4	54	32.1	28.3		9.5		2.8	54.3		8.5		59.8	33.7	L	9.1		31.8	37.5		4.0		11.5	16.4	L
9.5		47.1	7.5		9.5		47.7	44.2		9.5	26	13.2	17.0		9.5		32.1	14.2	B	9.5	53	8.0	0.8	
9.1	55	14.3	6.0		7.0		53.6	4.7	S	9.5		18.1	8.8		9.2		56.5	48.3		8.8		14.3	47.1	
9.1		22.0	6.7	K	8.0	12	2.4	22.6	B	9.4		18.7	50.7		9.0	38	5.2	16.8	B	9.4		47.1	8.3	
9.0		22.1	40.9		9.4		11.8	19.2		9.2		26.3	48.7		9.2		27.2	37.1		8.8		48.4	30.3	B
9.3		22.9	28.4		7.6		15.0	4.0	L	9.5		38.2	38.7		9.5		50.2	44.4		9.4		51.7	55.4	
9.4	56	8.7	22.9		9.5		58.6	52.0		9.2		46.0	53.8		9.0	39	1.2	37.2		9.5	54	23.1	39.5	
9.2		26.9	48.8	K	9.4	13	4.2	48.3		9.3	27	6.5	43.5		9.5		44.6	3.1		9.5		23.6	53.7	
7.5		50.3	30.1	L	9.4		10.3	19.6		9.4		15.0	45.9		9.4		52.5	53.9	B	8.8		45.1	10.1	L
9.2		52.3	43.1		9.4		12.0	11.9		9.5		44.3	52.5		9.5		53.2	26.2		7.5	55	6.5	34.0	K
9.5	57	3.8	6.9		9.4		37.8	29.5		9.4		45.7	3.3		9.5	40	45.3	10.3		9.0		13.1	25.3	
7.7		23.2	41.8	L	8.7		51.5	11.8	K	8.9		53.2	49.4		9.2	41	6.8	7.8		9.3		27.8	2.1	
9.4		25.4	44.9	B	9.2	14	1.3	47.3		9.4	28	16.9	40.2		8.2		18.4	28.5	K	9.2	56	8.5	53.5	
9.3		28.7	26.2	B	9.5		9.2	45.6		8.1		19.1	1.2	K	9.0		20.7	38.6	K	9.2		20.8	12.4	K
9.5		45.0	58.5		9.5		13.3	10.8		8.0		20.6	12.4	L	9.2		20.8	17.9		9.3		22.5	28.3	
8.8	58	30.6	9.2	K	9.1	15	50.9	10.4		9.5		36.1	32.4		9.0		32.2	23.7	K	9.4		25.6	36.0	
9.4		58.8	15.1		9.5		51.5	43.2		9.5		36.1	35.1		9.5		40.1	55.2		9.2		26.2	33.8	B
8.0	59	8.6	52.2	K	9.4		54.7	52.4	B	9.4		44.5	37.6	B	9.5		44.5	25.7		9.2		51.5	12.0	K
9.4		22.9	10.0		9.4	16	5.7	59.8	B	8.1		46.2	51.4	L	9.5		45.3	29.1		9.3		58 4	11.9	K
7.7		59.0	49.5	K	9.3		17.4	9.6		9.4		48.8	12.9	B	9.5		59.1	51.7		9.2	57	53.5	34.3	K
9.5	0	31.8	13.7		9.5	17	9.6	3.7		9.5		50.6	15.9		8.7	42	6.2	23.2	K	9.2	58	2.0	37.8	K
9.5		38.7	6.4		9.3		11.8	19.5		9.5	29	15.3	59.4		9.0		25.5	17.8	K	9.5		2.6	3.4	
8.5	1	1.5	4.1	K	9.5		16.3	34.3		9.5		46.2	50.1		9.3		29.5	51.3		9.5		37.1	4.8	
9.5		26.3	9.5		8.8		19.3	28.8	L	9.3		59.3	19.9		9.5		42.9	49.2		9.5		41.3	39.6	
9.4		51.5	36.0		9.2		37.2	52.2		9.4	30	25.8	22.6	K	8.8		56.5	12.7	K	7.6	59	22.1	4.3	K
9.5	2	11.8	28.8		9.0		53.2	11.0	L	8.8		44.0	48.7		9.0	43	7.6	15.0	K	9.5	0	14.9	5.5	
8.0		19.6	20.7	B	9.0	18	20.9	1.8	K	9.0	31	8.0	19.6	K	8.8		20.0	10.9	K	9.3		47.0	12.0	K
9.4		33.6	56.6		9.5		26.8	27.4		9.3		21.7	18.7		9.0	44	32.8	11.8	K	9.2		57.1	52.3	
9.5		42.7	22.9		9.3		31.6	2.1	K	8.5		24.0	58.7	L	9.5		39.8	55.5	B	8.7	1	16.0	44.3	
9.5	3	5.7	30.2		9.4	19	12.8	21.1	K	9.4		31.7	41.6	B	9.5		42.0	52.2		9.4		24.2	9.8	
8.8		7.8	43.9		9.5		14.0	14.3		9.5		53.6	9.0		6.0		46.5	22.3	K	7.7	2	19.3	48.3	K
9.5		18.2	18.5		9.5		30.6	55.2		9.4		55.1	0.9		9.3	45	3.9	55.5	B	8.2		40.5	39.1	K
9.0		54.8	34.0		9.5		31.1	6.0		9.4	32	21.2	19.4		9.5		18.6	35.7		9.2		56.2	13.6	
9.3	4	5.7	44.9		9.4		51.2	6.8		9.1		33.3	10.5	K	9.3		24.2	50.9	B	9.5	3	7.7	5.6	
8.8		35.6	4.8		9.5		57.1	1.1		9.4		41.0	14.0		9.3	46	8.6	5.7		7.2		46.8	55.5	K
8.2		45.8	21.8	K	8.8	20	22.3	48.0		9.5		51.4	52.0		9.5		43.8	55.8		9.5	4	3.8	4.7	
8.6	5	43.2	46.9	K	7.2		37.2	35.9	S	9.2	33	3.4	40.3		8.8	47	4.8	45.4	B	8.7		7.9	57.6	K
9.5	6	4.7	16.0		9.4	21	33.5	3.2		9.4		5.2	27.2		9.5		14.3	8.5		9.0		31.7	31.5	
9.0		15.5	37.0	K	9.2		36.5	6.3		8.9		7.1	1.2		8.0		17.5	42.9	B	9.1		45.1	47.7	
9.2		20.0	9.1		9.3		37.5	11.9		9.3		46.5	35.5		8.8		36.3	31.4	B	8.2		58.1	3.5	K
9.1		20.3	10.8		8.7		41.4	55.9	L	9.0	34	4.8	31.7	L	9.5		42.5	15.5	B	9.4	5	17.8	52.1	
9.1		23.8	52.5		9.4	22	15.9	58.8	B	9.5		6.3	5.8		9.5	48	3.1	42.5		9.3		45.9	32.2	
8.7		28.5	44.1	K	8.9		30.3	19.5	K	8.9		18.3	55.9		9.2		20.0	57.1		7.5		49.4	52.8	B
9.5		39.3	22.8		9.5		31.4	26.4	B	7.5		27.5	19.7	S	8.2		33.4	50.6	B	7.7		50.8	38.7	K
9.5	7	41.2	32.2		9.0		32.8	46.4	K	9.1		30.7	8.2		9.4		41.5	38.1		9.5	6	13.9	57.3	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	14ʰ—15ʰ	+29°			15ʰ	+29°			15ʰ—16ʰ	+29°			16ʰ	+29°			16ʰ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	50 36.2	17.5		9.3	17 26.7	25.5		9.5	45 3.5	42.5		9.2	3 31.9	24.7		9.2	25 18.0	45.8	
9.3	51 47.1	48.2		9.5	19 0.2	46.9		9.5	24.4	5.4		9.4	55.8	53.6		9.4	25.9	38.4	B
9.4	52 22.1	49.5		8.6	3.9	39.9	K	9.5	31.4	54.9		9.5	4 0.0	35.4		9.4	29.7	31.4	B
9.1	24.0	17.2		9.0	59.8	49.0	L	8.8	34.5	47.6		8.8	5 3.7	30.2		8.0	55.7	55.0	L
9.5	53 12.0	26.6		9.5	20 5.7	59.9		9.0	36.2	38.3	K	9.5	5.0	36.8		9.2	56.3	20.4	B
9.5	24.0	42.3		9.5	16.0	35.9		9.2	46.0	24.0		9.5	28.9	31.6		8.9	26 32.6	2.4	K
9.5	40.0	57.8		8.3	44.1	10.3	K	8.3	46 4.1	4.9	B	9.5	59.2	18.8		8.7	35.6	25.7	
9.5	54 4.5	37.5		9.3	21 24.7	19.3		8.8	11.7	30.0		9.5	6 39.9	49.7		9.5	27 15.3	49.6	
8.0	35.6	9.3	L	9.5	44.7	0.5		8.0	25.8	2.2	K	9.5	50.4	48.0		9.5	31.6	14.4	
9.4	55 10.6	53.1		4.0	53.2	36.5	K	7.8	36.0	20.6	L	9.4	7 41.7	9.1		9.1	34.9	6.9	K
9.4	51.1	15.1	B	9.4	22 20.6	1.5	B	9.4	47 4.7	7.9		9.5	56.0	53.6		8.8	29 55.6	27.5	
9.0	56 1.5	38.7	K	9.5	23 15.2	17.5		9.5	19.8	7.9		7.5	57.6	6.8	K	9.5	59.3	57.9	
9.5	17.9	9.7		9.5	48.5	56.7		8.3	28.2	1.8	K	9.5	8 19.3	38.6	B	9.3	30 2.1	16.4	
8.8	57 8.5	53.9		9.0	49.2	26.5		8.1	38.7	53.9	K	9.4	20.5	16.8		9.4	12.4	51.7	B
9.5	24.7	6.1		9.5	24 8.0	5.2		9.5	58.4	12.7		9.5	32.6	38.7	B	9.5	31 12.5	22.5	B
9.5	36.2	18.6		8.8	26.8	5.9		9.2	48 20.5	51.5	K	9.5	58.6	4.5		9.5	14.3	21.7	
9.0	59.0	56.2		9.0	27.2	48.6		9.5	24.0	34.6		9.4	9 2.2	24.4		9.3	22.1	31.9	
7.8	58 8.7	37.2	K	9.5	25 46.8	32.2	B	9.5	59.4	4.8		9.0	14.5	45.4		7.6	51.1	7.9	K
9.5	30.3	51.3		9.2	55.2	45.5		7.2	49 35.1	57.0	K	8.3	10 19.4	57.9	K	8.7	32 18.9	47.0	K
9.5	59 10.8	48.0		8.7	26 41.2	10.0	L	9.4	55.5	36.4		9.4	31.4	52.2		7.9	34.9	57.6	K
8.0	58.7	33.4	L	9.0	27 8.7	50.6		9.5	50 51.8	6.7		8.6	38.2	16.1		9.0	42.1	57.0	K
8.5	0 2.8	59.1	K	8.5	41.3	47.1	K	9.5	51 8.0	40.2		9.0	38.5	50.0		9.4	33 4.5	52.1	
9.5	3.0	47.7		9.5	28 27.5	55.5		9.5	54.2	55.2		5.7	55.7	30.9	K	9.1	15.0	7.2	K
8.4	17.2	45.9	L	9.0	32.6	36.8	K	9.5	52 4.9	43.2		9.5	11 6.4	32.2		7.3	42.1	30.1	K
9.2	19.8	9.6		9.3	29 27.3	50.6		8.9	30.4	58.6	K	7.5	22.7	47.0	K	9.2	34 20.2	16.4	K
8.7	20.2	32.7	K	8.9	35.0	11.1	L	9.3	37.0	47.0		9.4	43.7	59.5	B	9.3	28.1	11.1	
8.0	51.7	12.4	K	9.5	30 12.4	40.7	B	9.5	38.0	41.0		9.5	53.1	59.4	B	7.9	57.2	11.3	K
9.0	1 39.6	8.4	K	9.4	31 20.0	10.2		7.0	53 14.4	51.5	K	9.5	12 0.8	53.5		9.4	35 59.4	4.6	
7.3	51.0	4.5	K	9.4	56.6	3.5		9.5	30.5	15.5		9.4	6.4	1.2		8.7	36 4.4	42.5	K
9.4	52.8	43.4		9.4	32 5.7	56.7		9.5	54 40.3	9.1		9.5	27.0	46.7		9.5	16.0	5.3	
9.5	3 5.5	24.3		9.3	57.2	35.4		9.1	52.2	58.3	B	9.5	37.7	55.9		9.5	51.3	57.5	B
9.2	38.6	38.8		9.5	33 28.7	30.0		8.2	55 5.2	21.3	K	9.4	14 59.9	55.7		9.5	37 9.3	54.8	
7.3	48.7	47.1	L	9.5	29.2	53.4		8.9	13.0	7.1		8.7	15 21.5	15.8	K	8.8	16.7	0.7	K
9.5	5 15.4	3.4		8.0	40.0	40.0	K	8.9	29.6	1.3		8.5	24.9	52.5	K	8.9	18.0	34.3	
9.5	30.1	5.4		9.5	49.7	36.1		9.1	31.8	11.1		9.5	32.4	3.1		8.7	45.6	14.0	K
9.1	6 33.2	36.4		9.4	34 18.2	44.0		9.4	38.5	16.6		8.5	33.2	20.3	K	8.5	39 16.1	44.3	K
9.1	7 22.3	58.5		9.1	39.8	56.2		9.5	56 48.0	33.6		9.5	16 11.0	6.8	B	9.3	37.3	2.2	
9.5	24.7	16.1		9.5	52.2	53.6		8.5	57 4.4	21.9	K	9.5	17 27.0	37.7	B	9.0	40 11.9	57.5	
9.4	8 3.1	16.4	B	8.4	35 4.4	41.5	L	9.5	18.5	38.4		9.4	50.5	52.2		9.4	50.2	38.4	
5.5	28.4	43.4	K	9.1	27.8	4.9		9.0	19.5	14.3	K	9.5	55.9	27.8		9.5	41 18.3	58.7	
8.8	9 13.2	27.1	K	8.9	36 43.5	56.6		9.2	34.2	30.4	L	7.5	18 16.9	58.1	K	8.3	18.9	29.1	
9.3	19.0	57.6		9.5	38 10.0	48.8		9.4	37.6	2.2		9.5	44.8	1.4		8.8	41.4	46.5	
8.7	45.7	51.3	L	9.4	36.8	26.2		9.3	58 13.0	24.7		9.5	58.5	38.9		9.5	42 19.1	37.7	
9.5	10 19.6	7.8		9.2	42.6	39.2	B	9.5	18.5	51.8		8.9	19 19.0	35.1	B	9.5	38.5	4.4	
9.4	47.0	2.3		9.0	54.2	17.1		9.5	59 8.4	54.9		9.5	30.7	27.8		9.5	43 33.2	59.2	
8.8	52.9	1.3	K	9.5	39 24.6	7.5		9.2	43.8	56.4		9.5	56.9	11.2		9.4	52.2	3.0	B
9.1	59.4	32.7		8.5	48.3	25.1	K	9.3	0 0.7	24.1		9.2	57.8	5.5	K	9.5	44 20.6	24.4	
8.7	59.7	22.4	L	9.5	55.9	55.7		9.4	0.9	3.4		9.5	20 9.0	19.1		8.8	46.5	10.2	K
9.0	11 29.7	29.0	L	9.4	40 17.0	3.8		9.5	48.4	12.6		9.5	34.5	15.8		8.1	45 31.0	49.7	K
9.1	12 9.2	55.4		9.3	33.0	40.2		9.3	56.0	37.1		9.0	55.4	10.1	K	8.9	56.1	7.4	
8.7	18.3	10.5	K	9.5	48.4	59.3		9.3	1 16.9	32.2		9.3	58.7	8.2		9.3	46 10.2	56.4	K
9.5	36.5	56.2		9.3	54.3	21.6		9.4	26.5	40.9		9.3	22 23.9	40.5		9.2	47 36.3	29.8	K
9.5	13 13.2	23.0		8.3	41 12.7	33.0	K	9.2	45.8	25.1	B	8.4	26.4	59.8	K	9.2	37.1	43.9	K
9.5	20.2	43.0		9.5	42 4.4	50.0		7.5	47.6	23.1	K	6.8	45.9	23.6	K	9.2	45.2	37.2	
9.1	14 12.7	56.1		9.1	26.3	41.2		8.6	56.4	32.9	K	9.1	24 2.5	23.3		8.9	52.7	46.5	K
8.7	16.2	46.8		9.5	43 0.5	11.2		8.7	2 3.5	46.3		9.5	33.8	58.7		8.7	48 17.6	21.2	L
9.4	16 7.6	47.1	B	9.2	4.4	5.0		9.3	16.4	59.3		9.1	35.0	15.1		9.3	23.5	16.8	
9.5	37.7	6.5		9.0	16.5	0.8	K	9.4	34.0	52.0		9.5	37.9	22.7		9.3	34.5	52.5	K
9.3	17 7.2	40.7		9.5	34.0	11.6		9.5	40.0	55.6		9.3	25 6.1	21.6		9.5	48.7	3.1	
8.9	14.7	33.4	K	9.4	44 3.2	6.4		9.2	3 12.0	50.8	B	8.5	9.4	31.2	B	9.4	57.7	2.3	

11-9ᵐ 8ˢ +29°

✱ 2951—2960					2961—3020					3021—3080					3081—3140					3141—3200				
	19ᵘ–17ᵘ		+29°			17ᵘ		+29°			17ᵘ		+29°			17ᵘ		+29°			17ᵘ–18ᵘ		+29°	
m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′
9.5	49	12.1	27.4		9.5	7	45.6	58.9		9.5	22	35.3	48.8		9.5	34	43.4	0.3		9.1	48	44.5	33.3	K
9.4		19.6	16.7	L	9.1		51.7	28.2	B	9.5		39.7	44.7		8.3	35	16.0	44.8	L	9.2		51.1	34.0	
9.5	50	11.3	52.1		8.5	8	33.7	45.2	L	9.5		45.5	50.6		9.2		31.9	16.3	K	9.5		53.6	5.5	
9.5		43.1	15.1		9.5		53.3	8.6		9.5		47.5	49.3		9.2		32.5	11.4		9.5	49	31.0	37.5	
8.3	51	9.9	49.3	L	9.3		57.2	24.3		8.8		47.7	57.5	K	9.2		57.2	20.7	K	9.5		34.5	5.3	
8.9		15.1	19.9	K	9.4	9	5.5	42.5		8.9		55.1	57.5	K	9.2	36	0.5	26.5	K	9.5		41.1	17.1	
9.5		18.0	28.5		9.5		31.8	52.5		8.8	23	25.9	9.4		8.1		2.6	40.6	L	9.5	50	31.5	46.0	
9.2		25.1	40.8		9.5		37.9	5.5		9.0		39.0	31.5		9.5		4.0	5.2		9.5	51	4.3	17.1	
9.2		30.6	15.4	K	9.5		49.2	51.4		9.1		44.8	31.1		9.2		40.3	30.9	K	9.0		7.0	30.2	S
9.5		53.5	6.0		9.5		56.3	5.0		9.0	24	12.3	15.6		9.5		54.0	2.0		9.2		18.5	31.2	
9.5		58.6	34.6		8.5		57.0	38.3	K	9.5		33.5	16.4		6.5	37	0.0	29.6	K	9.2		32.5	33.7	
9.2	52	39.1	25.7		9.5	10	24.2	24.3		9.3		35.5	8.1		9.2		10.2	40.3		9.5		39.4	5.8	
9.5	53	14.8	4.5		9.5		30.7	42.1		7.9		38.0	37.6	K	9.5		17.6	27.3		8.7		59.5	30.2	S
9.5		42.9	23.1	B	9.5		45.8	19.8		9.5	25	18.7	34.9		9.1		19.3	18.0	B	8.8	52	5.5	29.8	
7.7		55.3	46.2	B	9.0	11	1.3	35.7		9.2		25.8	46.0	K	7.8		24.2	43.4	K	8.8		5.9	25.9	B
9.4	54	32.1	28.3		9.5		2.8	54.3		8.5		59.8	33.7	L	9.1		31.8	37.5		4.0		11.5	16.4	L
9.5		47.1	7.5		9.5		47.7	44.2		9.5	26	13.2	17.0		9.5		32.1	14.2	B	9.5	53	8.0	0.8	
9.1	55	14.3	6.0		7.0		53.6	4.7	S	9.5		18.1	8.8		9.2		56.5	48.3		8.8		14.3	47.1	
9.1		22.0	6.7	K	8.0	12	2.4	22.6	B	9.4		18.7	50.7		9.0	38	5.2	16.8	B	9.4		47.1	8.3	
9.0		22.1	40.9		9.4		11.8	19.2		9.2		26.3	48.7		9.2		27.2	37.1		8.8		48.4	30.3	B
9.3		22.9	28.4		7.6		15.0	4.0	L	9.5		38.2	38.7		9.5		50.2	44.4		9.4		51.7	55.4	
9.4	56	8.7	22.9		9.5		58.6	52.0		9.2		46.0	53.8		9.0	39	1.2	37.2		9.5	54	23.1	39.5	
9.2		26.9	48.8	K	9.4	13	4.2	48.3		9.3	27	6.5	43.5		9.5		44.6	3.1		9.5		23.6	53.7	
9.5		50.3	30.1	L	9.4		10.3	19.6		9.4		15.0	45.9		9.4		52.5	53.9	B	8.8		45.1	10.1	L
9.2		52.3	43.1		9.4		12.0	11.9		9.5		44.3	52.5		9.5		53.2	26.2		7.5	55	6.5	34.0	K
9.5	57	3.8	6.9		9.4		37.8	29.5		9.4		45.7	3.3		9.5	40	45.3	10.3		9.0		13.1	25.3	
8.7		23.2	41.8	L	8.7		51.5	11.8	K	8.9		53.2	49.4		9.2	41	6.8	7.8		9.3		27.8	2.1	
9.4		25.4	44.9	B	9.2	14	1.3	47.3		9.4	28	16.9	40.2		8.2		18.4	28.5	K	9.2	56	8.5	53.5	
9.3		28.7	26.2	B	9.5		9.2	45.6		8.1		19.1	1.2	K	9.0		20.7	38.6	K	9.2		20.8	12.4	K
9.5		45.0	58.5		9.5		13.3	10.8		8.0		20.6	12.4	L	9.2		20.8	17.9		9.3		22.5	28.3	
8.8	58	30.6	9.2	K	9.1	15	50.9	10.4		9.5		36.1	32.4		9.0		32.2	23.7	K	9.4		25.6	36.0	
9.4		58.8	15.1		9.5		51.5	43.2		9.5		36.1	35.1		9.5		40.1	55.2		9.2		26.2	33.8	B
8.0	59	8.6	52.2	K	9.4		54.7	52.4	B	9.4		44.5	37.6	B	9.5		44.5	25.7		9.2		51.5	12.0	K
9.4		22.9	10.0		9.4	16	5.7	59.8	B	8.1		46.2	51.4	L	9.5		45.3	29.1		9.3		58.4	11.9	K
7.7		59.0	49.5	K	9.3		17.4	9.6		9.4		48.8	12.9	B	9.5		59.1	51.7		9.2	57	53.5	34.3	K
9.5	0	31.8	13.7		9.5	17	9.6	3.7		9.5		50.6	15.9		8.7	42	6.2	23.2	K	9.2	58	2.0	37.8	K
9.5		38.7	6.4		9.3		11.8	19.5		9.5	29	15.3	59.4		9.0		25.5	17.8	K	9.5		2.6	3.4	
8.5	1	1.5	4.1	K	9.5		16.3	34.3		9.5		46.2	50.1		9.3		29.5	51.3		9.5		37.1	4.8	
9.5		26.3	9.5		8.8		19.3	28.8	L	9.3		59.3	19.9		9.5		42.9	49.2		9.5		41.3	39.6	
9.4		51.5	36.0		9.2		37.2	52.2		9.4	30	25.8	22.6	K	8.8		56.5	12.7	K	7.6	59	22.1	4.3	K
9.5	2	11.8	28.8		9.0		53.2	11.0	L	8.8		44.0	48.7		9.0	43	7.6	15.0	K	9.5	0	14.9	5.5	
8.0		19.6	20.7	B	9.0	18	20.9	1.8	K	9.0	31	8.0	19.6	K	8.8		20.0	10.9	K	9.3		47.0	12.0	K
9.4		33.6	56.6		9.5		26.8	27.4		9.3		21.7	18.7		9.0	44	32.8	11.8	K	9.2		57.1	52.3	
9.5		42.7	22.9		9.3		31.6	2.1	K	8.5		24.0	58.7	L	9.5		39.8	55.5	B	8.7	1	16.0	44.3	
9.5	3	5.7	30.2		9.4	19	12.8	21.1	K	9.4		31.7	41.6	B	9.5		42.0	52.2		9.4		24.2	9.8	
8.8		7.8	43.9		9.5		14.0	14.3		9.5		53 6	9.0		6.0		46.5	22.3	K	7.7	2	19.3	48.3	K
9.5		18.2	18.5		9.5		30.6	55.2		9.4		55.1	0.9		9.3	45	3.9	55.5	B	8.2		40.5	39.1	K
9.0		54.8	34.0		9.5		31.1	6.0		9.4	32	21.2	19.4		9.5		18.6	35.7		9.2		56.2	13.6	
9.3	4	5.7	44.9		9.4		51.2	6.8		9.1		33.3	10.5	K	9.3		24.2	50.9	B	9.5	3	7.7	5.6	
8.8		35.6	4.8		9.5		57.1	1.1		9.4		41.0	14.0		9.3	46	8.6	5.7		7.2		46.8	55.5	K
8.2		45.8	21.8	K	8.8	20	22.3	48.0		9.5		51.4	52.0		9.5		43.8	55.8		9.5	4	3.8	4.7	
8.6	5	43.2	46.9	K	7.2		37.2	35.9	S	9.2	33	3.4	40.3		8.8	47	4.8	45.4	B	8.7		7.9	57.6	K
9.5	6	4.7	16.0		9.4	21	33.5	3.2		9.4		5.2	27.2		9.5		14.3	8.5		9.0		31.7	31.5	
9.0		15.5	37.0	K	9.2		36.5	6.3		8.9		7.1	1.2		8.0		17.5	42.9	B	9.1		45.1	47.7	
9.2		20.0	9.1		9.3		37.5	11.9		9.3		46.5	35.5		8.8		36.3	31.4	B	8.2		58.1	3.5	K
9.1		20.3	10.8		8.7		41.4	55.9	L	9.0	34	4.8	31.7	L	9.5		42.5	15.5	B	9.4	5	17.8	52.1	
9.1		23.8	52.5		9.4	22	15.9	58.8	B	9.5		6.3	5.8		9.5	48	3.1	42.5		9.3		45.9	32.2	
8.7		28.5	44.1	K	8.9		30.3	19.5	K	8.9		18.3	55.9		9.2		20.0	57.1		7.5		49.4	52.8	B
9.5		39.3	22.8		9.5		31.4	26.4	B	7.5		27.5	19.7	S	8.2		33.4	50.6	B	7.7		50.8	38.7	K
9.5	7	41.2	32.2		9.0		32.8	46.4	K	9.1		30.7	8.2		9.4		41.5	38.1		9.5	6	13.9	57.3	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ	+29°			18ᵘ	+29°			18ᵘ	+29°			18ᵘ	+29°			18ᵘ—19ᵘ	+29°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	6 19.7	8.6			9.0	21 2.2	54.4		9.5	36 28.3	54.5		9.3	47 59.6	12.8		9.5	55 13.2	56.8	
9.5	20.2	16.7			9.0	32.1	30.3		9.5	46.2	14.3		8.9	48 4.5	14.1	B	9.2	29.8	53.3	B
8.2	30.6	41.1	K		9.5	46.8	25.8		9.3	51.1	47.6		9.5	5.2	58.0		9.5	35.8	6.0	B
9.0	7 55.3	48.2			8.4	22 47.6	55.8		9.5	37 13.2	3.7		8.3	5.9	28.1	K	6.8	40.6	19.2	L
9.0	58.2	31.5			9.3	23 5.9	0.6		9.5	23.3	14.6		8.8	16.2	15.8		8.2	45.8	4.9	?
9.3	8 6.5	46.6	B		9.5	9.3	11.0		8.7	24.1	39.7		8.5	35.6	35.2	K	9.2	56 5.1	33.8	
9.3	18.4	37.3			9.0	10.3	22.4		9.1	32.2	40.8		9.4	37.3	19.5		9.2	6.6	46.1	
9.5	26.7	25.3			9.1	16.0	37.9		9.5	37.6	4.3		9.4	48.6	14.2		9.1	11.6	49.0	P
9.4	28.4	33.8			7.7	34.9	27.6	B	9.5	38 3.1	9.5		9.0	51.9	51.8	K	9.4	23.0	57.5	
9.5	31.1	32.8			8.3	35.6	49.8	B	9.5	19.9	58.6		9.5	49 1.8	13.4		9.3	44.3	3.6	
9.3	35.6	35.1	B		8.5	53.0	49.9	B	9.0	33.8	49.0	K	7.6	13.6	51.0	K	9.5	52.8	41.4	
9.5	52.0	57.0			8.6	59.5	53.2	S	8.9	48.6	45.9	K	9.1	21.6	37.3		9.3	54.5	26.2	
7.0	9 7.0	10.8	K		9.2	24 8.7	16.1	K	9.5	53.1	1.5	B	9.4	24.3	48.3		7.8	59.3	4.7	K
9.2	8.1	27.5	B		9.5	25.0	8.0		9.5	39 15.2	34.5		9.2	25.3	17.0		9.5	57 7.7	48.3	
9.0	21.2	22.9	L		9.1	28.8	26.5	K	9.0	18.2	17.7		9.5	28.7	31.6		9.5	16.9	17.9	
9.0	28.3	4.0	K		9.5	29.4	52.8	B	9.5	40.4	7.1		9.5	33.1	31.6		9.5	27.0	15.8	
9.1	35.4	46.1			9.5	32.5	59.8		9.5	42.7	11.2		9.3	33.5	5.6		7.8	34.8	48.9	B
9.4	35.5	58.6			9.4	25 3.6	20.7	B	9.4	40 15.3	37.3		9.4	33.9	45.9		9.5	58.2	45.2	
9.5	43.3	31.2			9.5	4.8	4.3		9.4	17.1	11.2		8.5	48.3	2.3	K	9.5	58 12.0	1.1	
9.5	54.7	54.9			9.1	50.8	41.6		9.5	19.4	59.2		9.5	50 0.8	12.9		8.9	24.9	57.4	K
9.5	10 1.6	6.5			9.5	58.8	8.0	B	9.5	37.6	22.9		9.2	2.1	36.1		9.5	28.0	44.7	
9.3	25.5	35.1	B		9.4	26 0.9	58.8		9.5	43.5	37.0		8.8	8.5	24.4		9.5	33.2	44.9	
9.4	36.1	51.2	B		9.4	27 2.4	1.4		9.5	41 9.4	9.7	B	9.3	26.0	0.7		9.5	37.3	41.9	I
9.5	36.6	49.2			9.3	11.9	7.6		9.5	23.0	19.5	B	9.4	32.8	22.6	B	9.3	59 11.2	31.5	
9.4	37.3	7.8	B		9.0	22.2	39.4	K	9.5	30.2	49.1		9.5	37.5	40.8		9.5	14.3	25.9	
8.5	11 27.4	33.9	B		9.5	42.5	54.3		9.5	32.9	34.2		9.5	40.5	1.4		9.4	42.6	33.5	
9.3	48.6	29.3	K		9.0	57.6	53.0	K	9.2	47.1	47.0		9.2	43.4	33.3		8.8	43.5	11.9	
9.5	52.7	38.2			9.0	28 16.3	23.0		9.2	54.0	5.1		9.5	55.0	6.8		8.8	43.7	8.2	
9.0	12 20.6	28.6	K		9.5	39.6	19.8		9.5	42 2.3	21.1		8.7	58.1	38.5		9.2	45.9	29.8	B
9.0	22.1	17.2	L		9.5	40.4	16.8	B	9.2	12.0	33.9		8.1	51 7.5	42.3	B	9.5	47.6	5.8	
9.5	53.4	57.8			6.8	43.5	38.2	K	9.5	18.3	33.3		9.4	24.6	12.2		9.3	0 7.0	57.6	
9.4	53.4	52.1			9.1	53.7	1.7		8.3	34.1	49.6	B	9.5	39.0	36.7		6.5	7.6	41.9	K
9.5	13 15.5	17.9			7.7	29 4.3	51.9	K	9.5	54.6	13.4		9.3	39.5	37.2	B	8.0	9.8	6.7	K
9.0	31.6	32.3	K		9.5	30 4.5	10.3		9.4	56.7	12.6		9.2	52.2	44.8		9.3	13.4	9.6	
9.1	51.7	51.2			8.5	5.5	59.1		9.3	43 22.9	38.6		9.5	52 1.4	37.3		8.8	25.9	13.5	B
6.5	14 17.5	35.8	K		8.8	39.4	54.2	K	9.5	37.1	37.3		8.6	12.0	54.3		9.3	36.0	28.0	
8.2	29.1	23.0	L		9.0	47.0	50.3	K	8.3	47.8	10.4	K	9.3	22.7	37.5		9.5	36.6	7.0	
9.3	29.6	2.3	K		9.3	51.0	5.9		9.5	52.0	56.8		9.5	29.8	25.4		9.3	39.1	52.0	
9.0	31.2	19.3	L		9.2	31 10.7	44.7	K	9.5	55.5	5.6		9.2	32.2	13.1	K	9.5	52.2	46.6	
9.2	15 14.2	43.5	K		9.0	23.3	55.0	K	9.2	44 24.0	1.5		9.2	37.0	59.1		9.5	54.3	56.2	
5.5	22.2	47.6	K		9.5	30.2	4.9	B	7.2	26.6	38.8	K	9.4	55.5	4.6		9.4	1 57.4	16.2	
8.9	33.0	16.1	B		7.0	53.9	27.4	K	9.5	35.9	13.5		9.2	53 11.3	8.3	K	9.0	2 7.0	13.5	
9.5	45.3	16.6			9.5	32 13.8	41.4		8.9	37.1	5.2		6.8	14.6	59.0	L	8.0	15.1	34.5	S
8.7	16 10.8	11.3	K		9.5	19.6	10.1		9.5	53.2	55.4		9.3	22.8	22.9		8.9	15.3	46.1	
8.0	26.5	56.7	L		9.5	28.2	3.6		9.1	45 3.9	30.0		9.2	23.0	6.3	K	9.2	20.9	16.4	
9.3	17 8.5	5.0			9.5	40.2	58.4		9.4	8.7	30.0		9.3	35.8	35.7		9.2	38.1	13.7	
8.1	28.1	17.6	K		9.2	33 7.7	50.8		8.3	23.5	33.2		8.9	39.9	36.5	B	9.5	55.1	3.1	
9.1	35.5	10.0	B		9.5	8.0	43.9		9.2	32.6	3.9		9.5	42.6	33.4		8.7	3 6.3	7.8	
9.2	42.4	17.3			9.5	13.1	16.0		9.5	44.6	43.5		8.5	43.1	24.5	S	8.4	13.5	49.4	
9.2	43.4	9.0			8.6	48.0	24.2		9.5	46 0.9	28.7		9.2	51.0	46.6		8.4	17.5	43.1	
9.1	46.5	4.2	K		9.1	48.8	52.2		8.5	3.7	55.5	K	9.5	58.2	49.1		9.1	20.6	50.9	
9.3	58.3	2.1	K		9.4	34 18.5	15.0		8.8	14.3	3.9	K	8.9	54 5.8	36.9		8.1	22.3	40.6	
9.2	18 36.0	4.0	K		9.5	27.2	16.0		9.4	28.0	31.5		9.5	26.4	1.9		9.3	23.6	16.0	B
9.1	19 48.1	51.9	K		9.0	35 3.5	39.4		9.3	44.1	20.0		8.5	28.7	11.7	K	9.5	26.8	17.0	
9.5	55.6	5.8	B		9.5	19.6	19.6		8.1	48.6	20.9	B	9.2	39.9	55.4		9.5	49.8	5.3	
9.5	20 9.1	1.8			9.5	35.1	57.3		9.5	47 14.1	50.5		9.4	44.3	36.8		8.2	51.7	7.6	K
8.3	9.5	19.5			8.9	36.4	20.6	B	9.3	20.4	44.8	B	9.0	47.6	31.0	K	9.2	52.5	50.2	
9.5	17.6	26.1			9.0	44.9	35.5		9.5	35.0	51.5		9.1	52.6	24.1	K	9.2	4 4.6	38.0	
6.1	23.3	44.9	L		9.5	52.0	0.9		9.4	40.3	26.8		9.3	53.6	23.4		9.2	5.5	54.1	
9.5	53.8	22.4			9.0	36 4.7	26.4	B	9.5	42.7	28.4	B	9.5	55 4.2	23.4		9.5	45.4	14.2	

	3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ᵘ		+29°		19ᵘ		+29°		19ᵘ		+29°		19ᵘ		+29°		19ᵘ		+29°	
m	m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
	9.5	4 59.9	33.2		8.8	14 45.4	20.3		9.4	25 1.3	8.0		9.2	32 52.6	33.0		9.5	41 16.3	24.9	
	9.3	5 8.8	46.6	K	9.5	46.8	35.6		9.4	15.8	42.4		9.5	33 0.0	11.6		9.5	26.2	22.4	
	9.5	13.0	0.7		9.5	59.5	17.2		8.5	20.5	24.1		9.3	11.5	13.8	K	9.3	28.8	55.5	K
	9.3	35.5	55.0	K	9.4	15 4.7	55.8	B	9.5	36.0	55.5		5.3	39.5	48.8	L	8.9	39.3	5.7	
	9.4	40.5	52.8	K	9.5	9.2	59.2		9.4	38.4	51.2	B	8.5	41.1	35.5	K	9.4	48.8	42.9	
	7.7	51.1	39.0	L	8.6	40.4	31.6		9.5	39.6	20.0		7.6	49.6	25.1	K	9.5	53.4	39.0	
	9.5	52.7	36.3		8.8	50.7	55.8		9.5	57.5	43.4		9.3	34 5.5	48.8	K	9.3	42 3.0	55.3	
	9.4	55.0	47.9		7.2	16 0.5	38.2	L	8.0	26 13.8	53.1	L	8.9	7.0	2.0		8.8	18.3	30.1	
	9.2	6 8.4	56.8	K	9.2	5.3	13.3		8.8	21.7	28.6		9.4	7.2	40.5		9.4	21.1	6.9	
	9.4	15.2	7.8		9.5	9.1	29.6		9.4	35.7	44.2		9.3	8.1	6.4		9.3	21.9	27.4	
	8.7	23.9	28.6		8.4	19.2	51.6		9.5	36.3	36.3		9.5	19.7	23.0		9.2	30.2	15.6	
	9.4	25.8	3.8		9.5	54.8	30.5	B	9.2	39.9	19.5		9.2	48.5	58.5	K	9.0	43.3	3.0	K
	9.1	45.0	57.1	K	8.8	17 1.3	40.9		9.0	49.1	32.1		9.3	49.7	54.7		9.3	52.7	41.8	
	8.2	47.5	46.0	L	9.5	3.4	29.3		9.5	55.0	57.7		9.4	35 6.3	7.0		7.7	53.5	2.7	K
	9.3	7 0.8	18.5		9.4	4.9	29.7	B	9.5	59.3	16.8		9.3	29.9	24.2		9.4	43 7.9	26.7	
	9.5	20.2	42.2		7.5	6.5	59.5	L	9.1	27 0.6	3.0	B	9.3	40.7	8.2		8.5	14.9	30.7	
	8.0	26.4	47.9	L	9.5	8.3	23.2		9.5	5.5	42.3		9.4	53.2	53.9		9.4	30.9	47.2	
	8.4	41.5	11.6		9.5	24.1	30.6		9.4	7.1	10.1		9.4	36 4.1	31.2		9.5	38.1	14.5	
	9.2	44.8	22.2		9.4	28.5	13.4	K	8.6	30.3	23.4	K	9.5	13.7	24.7		9.3	39.5	58.2	
	9.5	8 5.6	40.5		9.1	34.1	36.7		9.5	38.0	46.3		8.8	24.6	50.2		8.3	42.7	0.8	L
	9.2	15.9	44.9		9.5	39.4	31.1		9.5	41.6	58.6		9.3	25.8	5.2		8.3	46.8	29.9	
	9.1	16.3	24.4		9.5	18 5.0	57.9		8.8	53.5	6.6	B	8.0	26.0	9.2	K	9.4	48.2	42.2	B
	9.4	42.2	46.6		9.0	16.5	0.1		9.4	57.5	21.3		9.1	37.1	12.2		8.8	50.8	18.1	
	8.6	46.5	38.3		5.2	24.5	20.2	K	9.5	28 4.8	11.6		9.0	38.5	54.5		9.5	53.1	46.2	
	8.8	50.9	30.7		9.5	25.7	59.5		9.5	25.2	53.0		9.5	54.4	8.2		9.0	55.3	20.6	
	9.0	52.2	6.8	K	9.5	54.1	17.5		9.3	25.6	15.8		9.5	37 7.2	1.0		9.4	44 15.8	53.5	
	8.6	52.4	29.8	B	9.3	19 8.4	33.3		9.3	34.3	3.2		9.5	14.7	14.3		8.5	28.9	39.2	
	9.5	58.1	12.0		8.9	19.0	43.4		9.5	42.7	46.9		9.4	15.5	19.9		9.5	35.8	1.0	
	8.0	9 15.9	16.6	B	9.5	50.0	18.6		9.5	46.3	8.9		9.2	22.1	44.4		9.3	40.1	15.3	
	9.5	34.7	39.0		9.0	51.9	29.1		9.3	50.5	54.8		7.3	30.8	53.5	K	9.3	44.0	1.6	
	9.5	40.3	30.4		9.3	56.3	22.9	B	5.8	29 5.2	8.5	K	9.3	42.7	18.0		9.2	46.1	50.3	
	9.0	45.8	26.2		9.0	20 18.4	14.3	R	9.3	10.7	36.1		9.4	45.8	2.0		9.5	56.0	2.5	
	9.0	46.0	50.2	K	9.5	29.9	41.5		8.3	16.0	27.9	R	9.5	49.5	39.0		9.4	59.7	49.5	
	8.8	54.7	8.1	K	9.5	44.5	12.2	B	9.4	37.1	6.4		9.1	38 11.8	42.0		9.3	45 3.0	2.2	
	9.3	10 22.9	42.7		9.0	50.5	38.3		8.3	42.7	44.2		9.3	19.1	53.1		9.5	4.8	13.4	
	9.5	28.6	2.4		9.3	51.3	12.2	B	8.9	47.9	24.7		9.0	23.6	36.5		9.3	11.9	48.2	
	9.3	43.2	56.0		8.5	21 2.8	11.6	K	9.5	30 15.3	11.3		9.5	40.4	47.7		9.4	34.7	13.2	
	neb	54.5	55.0		9.5	15.2	44.3		9.0	15.8	5.2		9.4	46.3	47.8	B	9.5	46 16.5	30.3	
	9.5	11 0.1	10.8		9.5	40.9	25.8	B	9.5	22.0	57.1	B	9.3	50.0	20.7		9.2	24.0	2.2	
	9.5	17.9	0.2		9.3	41.7	36.7		9.2	26.3	29.8		9.2	57.5	37.5		9.4	24.6	26.8	
	9.5	28.5	45.8		9.5	42.7	23.8		9.2	29.5	50.8		8.2	58.8	24.9		9.4	31.3	41.9	
	8.7	32.7	34.3		8.9	43.4	10.3	B	9.5	31.1	13.5		8.6	39 11.5	24.9		8.9	52.1	40.4	
	9.1	42.8	48.1		9.5	55.1	31.3		9.5	35.2	1.9		9.1	16.3	46.9		8.3	47 4.1	49.1	
	9.4	46.4	14.5		9.5	56.3	18.7		9.2	36.5	15.0		8.1	17.1	14.5	K	9.5	6.2	7.0	
	9.5	12 15.1	39.8		9.4	22 3.4	55.2		9.4	37.0	46.4		9.5	28.6	17.9		9.5	8.0	4.7	B
	9.1	18.5	47.3		9.3	15.0	2.7		9.1	42.6	43.9		9.5	30.7	44.6		9.4	9.7	58.9	
	9.5	21.1	38.2		9.5	21.6	33.0		9.5	31 1.0	8.5		9.3	31.1	29.5		9.5	14.1	2.9	
	8.8	21.6	31.6	B	8.5	27.2	23.9		9.5	11.2	42.2		9.5	40.8	47.0		9.2	23.0	54.8	B
	9.4	37.8	21.6		7.0	29.3	9.3	K	9.3	17.8	42.9		9.3	50.7	39.5		9.4	30.0	2.3	
	8.0	46.5	41.6	K	8.6	57.1	54.5		6.8	23.2	0.7	B	8.3	57.5	54.3		9.2	32.1	0.3	B
	9.2	47.1	28.5		9.3	59.0	5.9		9.5	27.1	6.3		9.4	40 0.4	58.7		9.1	52.1	28.0	K
	9.4	50.4	21.1		9.0	23 1.9	18.7	K	7.5	43.8	16.9	L	9.3	8.2	54.8		9.5	48 5.5	57.1	
	9.5	56.3	37.6		9.4	31.1	24.9	B	8.5	57.2	4.1	K	8.5	18.5	23.9	K	9.0	31.4	47.5	
	9.5	13 14.6	26.1		9.2	47.3	42.9	K	9.5	58.5	53.7		9.0	27.0	1.7		9.3	32.8	18.2	
	9.4	23.4	58.8	B	9.5	52.7	34.6		9.4	59.0	0.8		9.5	28.0	3.3		8.2	35.4	38.4	K
	9.5	39.4	58.0		9.5	24 12.7	19.2		9.3	32 14.6	55.6		8.8	39.2	48.8		9.4	42.7	1.0	
	9.5	48.4	19.7		9.0	15.3	0.8		9.4	19.6	49.0		9.0	50.7	41.8		9.2	52.6	18.0	
	9.4	14 3.9	38.5		8.8	26.5	46.9	K	9.3	20.2	53.5		8.8	55.3	6.1		9.5	49 3.2	18.5	
	9.5	26.2	41.5		9.5	33.0	24.4		9.5	23.8	51.9		9.2	41 1.5	21.4	K	8.4	8.1	46.1	K
	9.0	40.1	25.7		9.0	54.2	36.5		9.5	27.9	36.0		8.4	3.7	10.8		9.5	11.4	27.5	

+29°

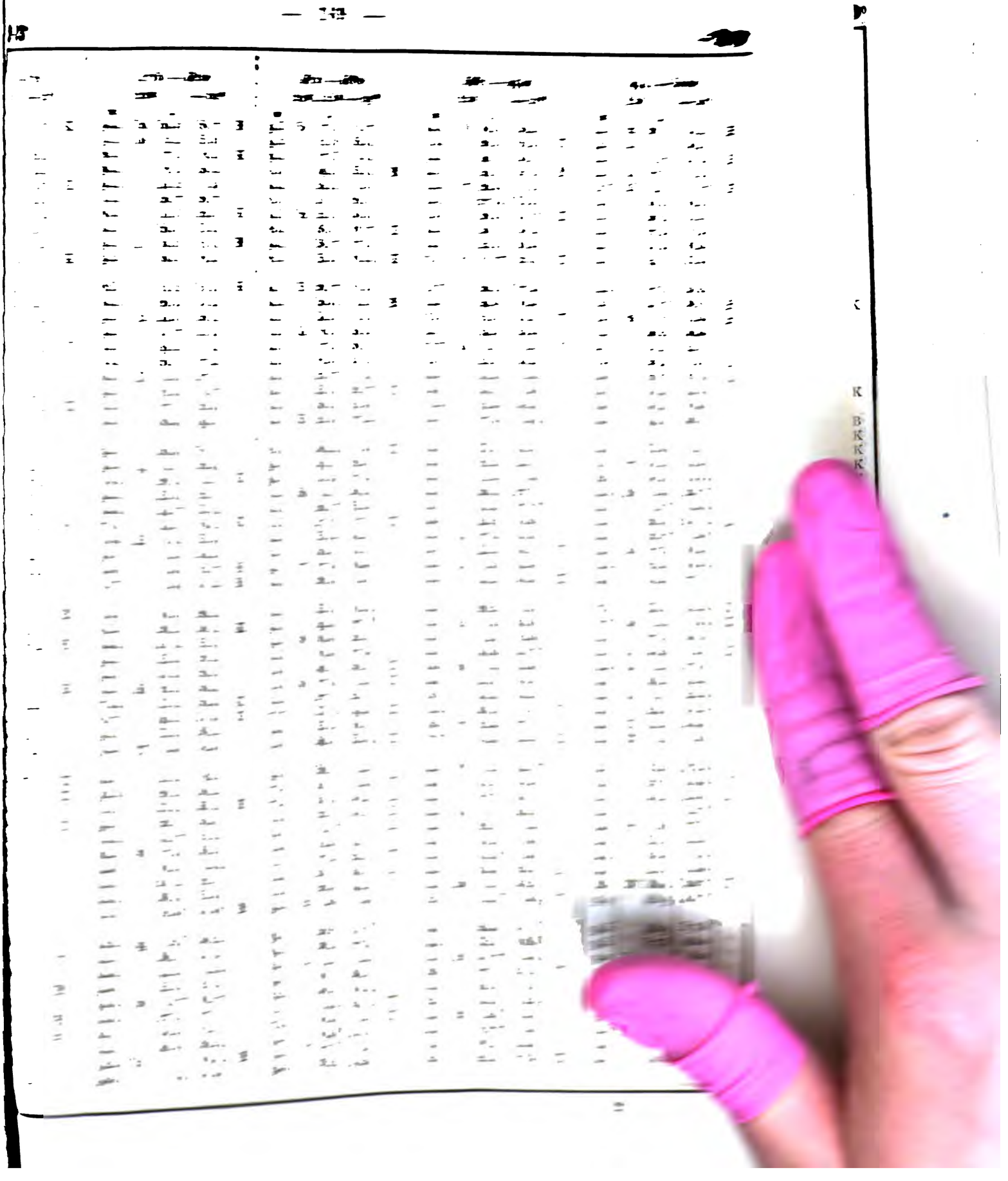
3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ	+29°			18ᵘ	+29°			18ᵘ	+29°			18ᵘ	+29°			18ᵘ—19ᵘ	+29°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	6 19.7	8.6		9.0	21 2.2	54.4		9.5	36 28.3	54.5		9.3	47 59.6	12.8		9.5	55 13.2	45.8	
9.5	20.2	16.7		9.0	32.1	30.3		9.5	46.2	14.3		8.9	48 4.5	14.1	B	9.2	29.8	53.3	B
8.2	30.6	41.1	K	9.5	46.8	25.8		9.3	51.1	47.6		9.5	5.2	58.0		9.5	35.8	6.0	B
9.0	7 55.3	48.2		8.4	22 47.6	55.8		9.5	37 13.2	3.7		8.3	5.9	28.1	K	6.8	40.6	19.2	L
9.0	58.2	31.5		9.3	23 5.9	0.6		9.5	23.3	14.6		8.8	16.2	15.8		8.2	45.8	4.9	
9.3	8 6.5	46.6	B	9.5	9.3	11.0		8.7	24.1	39.7		8.5	35.6	35.2	K	9.2	56 5.1	33.8	
9.3	18.4	37.3		9.0	10.3	22.4		9.1	32.2	40.8		9.4	37.3	19.5		9.2	6.6	46.1	
9.5	26.7	25.3		9.1	16.0	37.9		9.5	37.6	4.3		9.4	48.6	14.2		9.1	11.6	49.0	I
9.4	28.4	33.8		7.7	34.9	27.6	B	9.5	38 3.1	9.5		9.0	51.9	51.8	K	9.4	23.0	57.5	
9.5	31.1	32.8		8.3	35.6	49.8	B	9.5	19.9	58.6		9.5	49 1.8	13.4		9.3	44.3	3.6	
9.3	35.6	35.1	B	8.5	53.0	49.9	B	9.0	33.8	49.0	K	7.6	13.6	51.0	K	9.5	52.8	41.4	
9.5	52.0	57.0		8.6	59.5	53.2	S	8.9	48.6	45.9	K	9.1	21.6	37.3		9.3	54.5	26.2	
7.0	9 7.0	10.8	K	9.2	24 8.7	16.1	K	9.5	53.1	1.5	B	9.4	24.3	48.3		7.8	59.3	4.7	I
9.2	8.1	27.5	B	9.5	25.0	8.0		9.5	39 15.2	34.5		9.2	25.3	17.0		9.5	57 7.7	48.3	
9.0	21.2	22.9	L	9.1	28.8	26.5	K	9.0	18.2	17.7		9.5	28.7	31.6		9.5	16.9	17.9	
9.0	28.3	4.0	K	9.5	29.4	52.8	B	9.5	40.4	7.1		9.5	33.1	31.6		9.5	27.0	15.8	
9.1	35.4	46.1		9.5	32.5	59.8		9.5	42.7	11.2		9.3	33.5	5.6		7.8	34.8	48.9	B
9.4	35.5	58.6		9.4	25 3.6	20.7	B	9.4	40 15.3	37.3		9.4	33.9	45.9		9.5	58.2	45.2	
9.5	43.3	31.2		9.5	4.8	4.3		9.4	17.1	11.2		8.5	48.3	2.3	K	9.5	58 12.0	1.1	
9.5	54.7	54.9		9.1	50.8	41.6		9.5	19.4	59.2		9.5	50 0.8	12.9		8.9	24.9	57.4	K
9.5	10 1.6	6.5		9.5	58.8	8.0	B	9.5	37.6	22.9		9.2	2.1	36.1		9.5	28.0	44.7	
9.3	25.5	35.1	B	9.4	26 0.9	58.8		9.5	43.5	37.0		8.8	8.5	24.4		9.5	33.2	44.9	
9.4	36.1	51.2	B	9.4	27 2.4	1.4		9.5	41 9.4	9.7	B	9.3	26.0	0.7		9.5	37.3	41.9	I
9.5	36.6	49 2		9.3	11.9	7.6		9.5	23.0	19.5	B	9.4	32.8	22.6	B	9.3	59 11.2	31.5	
9.4	37.3	7.8	B	9.0	22.2	39.4	K	9.5	30.2	49.1		9.5	37.5	40.8		9.5	14.3	25.9	
8.5	11 27.4	33.9	B	9.5	42.5	54.3		9.5	32.9	34.2		9.5	40.5	1.4		9.4	42.6	33.5	
9.3	48.6	29.3	K	9.0	57.6	53.0	K	9.2	47.1	47.0		9.2	43.4	33.3		8.8	43.5	11.9	
9.5	52.7	38.2		9.0	28 16.3	23.0		9.2	54.0	5.1		9.5	55.0	6.8		8.8	43.7	8.2	I
9.0	12 20.6	28.6	K	9.5	39.6	19.8		9.5	42 2.3	21.1		8.7	58.1	38.5		9.2	45.9	29.8	B
9.0	22.1	17.2	L	9.5	40.4	16.8	B	9.2	12.0	33.9		8.1	51 7.5	42.3	B	9.5	47.6	5.8	
9.5	53.4	57.8		6.8	43.5	38.2	K	9.5	18.3	33.3		9.4	24.6	12.2		9.3	0 7.0	57.6	
9.4	53.4	52.1		9.1	53.7	1.7	K	8.3	34.1	49.6	B	9.5	39.0	36.7		6.5	7.6	41.9	K
9.5	13 15.5	17.9		7.7	29 4.3	51.9	K	9.5	54.6	13.4		9.3	39.5	37.2	B	8.0	9.8	6.7	K
9.0	31.6	32.3	K	9.5	30 4.5	10.3		9.4	56.7	12.6		9.2	52.2	44.8		9.3	13.4	9.6	
9.1	51.7	51.2		8.5	5.5	59.1		9.3	43 22.9	38.6		9.5	52 1.4	37.3		8.8	25.9	13.5	B
6.5	14 17.5	35.8	K	8.8	39.4	54.2	K	9.5	37.1	37.3		8.6	12.0	54.3		9.3	36.0	28.0	
8.2	29.1	23.0	L	9.0	47.0	50.3	K	8.3	47.8	10.4	K	9.3	22.7	37.5		9.5	36.6	7.0	
9.3	29.6	2.3	K	9.3	51.0	5.9		9.5	52.0	56.8		9.5	29.8	25.4		9.3	39.1	52.0	
9.0	31.2	19.3	L	9.2	31 10.7	44.7	K	9.5	55.5	5.6		9.2	32.2	13.1	K	9.5	52.2	46.6	
9.2	15 14.2	43.5	K	9.0	23.3	55.0	K	9.2	44 24.0	1.5		9.2	37.0	59.1		9.5	54.3	56.2	
5.5	22.2	47.6	K	9.5	30.2	4.9	B	7.2	26.6	38.8	K	9.4	55.5	4.6		9.4	1 57.4	16.2	
8.9	33.0	16.1	B	7.0	53.9	27.4	K	9.5	35.9	13.5		9.2	53 11.3	8.3	K	9.0	2 7.0	13.5	
9.5	45.3	16.6		9.5	32 13.8	41.4		8.9	37.1	5.2		6.8	14.6	59.0	L	8.0	15.1	34.5	S
8.7	16 10.8	11.3	K	9.5	19.6	10.1		9.5	53.2	55.4		9.3	22.8	22.9		8.9	15.3	46.1	
8.0	26.5	56.7	L	9.5	28.2	3.6		9.1	45 3.9	30.0		9.2	23.0	6.3	K	9.2	20.9	16.4	
9.3	17 8.5	5.0		9.5	40.2	58.4		9.4	8.7	10.0		9.3	35.8	35.7		9.2	38.1	13.7	
8.1	28.1	17.6	K	9.2	33 7.7	50.8		8.3	23.5	33.2		8.9	39.9	36.5	B	9.5	55.1	3.1	
9.1	35.5	10.0	B	9.5	8.0	43.9		9.2	32.6	3.9		9.5	42.6	33.4		8.7	3 6.3	7.8	
9.2	42.4	17.3		9.5	13.1	16.0		9.5	44.6	43.5		8.5	43.1	24.5	S	8.4	13.5	49.4	
9.2	43.4	9.0		8.6	48.0	24.2		9.5	46 0.9	28.7		9.2	51.0	46.6		8.4	17.5	43.1	
9.1	46.5	4.2	K	9.1	48.8	52.2		8.5	3.7	55.5	K	9.5	58.2	49.1		9.1	20.6	50.9	
9.3	58.3	2.1	K	9.4	34 18.5	15.0		8.8	14.3	3.9	K	8.9	54 5.8	36.9		8.1	22.3	40.6	
9.2	18 36.0	4.0	K	9.5	27.2	16.0		9.4	28.0	31.5		9.5	26.4	1.9		9.3	23.6	16.0	B
9.1	19 48.1	51.9	K	9.0	35 3.5	39.4		9.3	44.1	20.0		8.5	28.7	11.7	K	9.5	26.8	17.0	
9.5	55.6	5.8	B	9.5	19.6	19.6		8.1	48.6	20.9	B	9.2	39.9	55.4		9.5	49.8	5.3	
9.5	20 9.1	1.8		9.5	35.1	57.3		9.5	47 14.1	50.5		9.4	44.3	36.8		8.2	51.7	7.6	K
8.3	9.5	19.5		8.9	36.4	20.6	B	9.3	20.4	44.8	B	9.0	47.6	31.0	K	9.2	52.5	50.2	
9.5	17.6	26.1		9.0	44.9	35.5		9.5	35.0	51.5		9.1	52.6	24.1	K	9.2	4 4.6	38.0	
6.1	23.3	44.9	L	9.5	52.0	0.9		9.4	40.3	26.8		9.3	53.6	23.4		9.2	5.5	54.1	
9.5	53.8	22.4		9.0	36 4.7	26.4	B	9.5	42.7	28.4	B	9.5	55 4.2	23.4		9.5	45.4	14.2	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
19h		+29°		19h		+29°		19h		+29°		19h		+29°		19h		+29°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
9.5	4	59.9	33.2	8.8	14	45.4	20.3	9.4	25	1.3	8.0	9.2	32	52.6	33.0	9.5	41	16.3	24.9
9.3	5	8.8	46.6	K	9.5		46.8	35.6	9.4		15.8	42.4	9.5	33	0.0	11.6	9.5		26.2	22.4
9.5		13.0	0.7		9.5		59.5	17.2	8.5		20.5	24.1	9.3		11.5	13.8	K	9.3		28.8	55.5	K
9.3		35.5	55.0	K	9.4	15	4.7	55.8	B	9.5		36.0	55.5		5.3		39.5	48.8	L	8.9		39.3	5.7	
9.4		40.5	52.8	K	9.5		9.2	59.2		9.4		38.4	51.2	B	8.5		41.1	35.5	K	9.4		48.8	42.9	
7.7		51.1	39.0	L	8.6		40.4	31.6		9.5		39.6	20.0		7.6		49.6	25.1	K	9.5		53.4	39.0	
9.5		52.7	36.3		8.8		50.7	55.8		9.5		57.5	43.4		9.3	34	5.5	48.8	K	9.3	42	3.0	55.3	
9.4		55.0	47.9		7.2	16	0.5	38.2	L	8.0	26	13.8	53.1	L	8.9		7.0	2.0		8.8		18.3	30.1	
9.2	6	8.4	56.8	K	9.2		5.3	13.3		8.8		21.7	28.6		9.4		7.2	40.5		9.4		21.1	6.9	
9.4		15.2	7.8		9.5		9.1	29.6		9.4		35.7	44.2		9.3		8.1	6.4		9.3		21.9	27.4	
8.7		23.9	28.6		8.4		19.2	51.6		9.5		36.3	36.3		9.5		19.7	23.0		9.2		30.2	15.6	
9.4		25.8	3.8		9.5		54.8	30.5	B	9.2		39.9	19.5		9.2		48.5	58.5	K	9.0		43.3	3.0	K
9.1		45.0	57.1	K	8.8	17	1.3	40.9		9.0		49.1	32.1		9.3		49.7	54.7		9.3		52.7	41.8	
8.2		47.5	46.0	L	9.5		3.4	29.3		9.5		55.0	57.7		9.4	35	6.3	7.0		7.7		53.5	2.7	K
9.5	7	0.8	18.5		9.4		4.9	29.7	B	9.5		59.3	16.8		9.3		29.9	24.2		9.4	43	7.9	26.7	
9.5		20.2	42.2		7.5		6.5	59.5	L	9.1	27	0.6	3.0	B	9.3		40.7	8.2		8.5		14.9	30.7	
8.0		26.4	47.9	L	9.5		8.3	23.2		9.5		5.5	42.3		9.4		53.2	53.9		9.4		30.9	47.2	
8.4		41.5	11.6		9.5		24.1	30.6		9.4		7.1	10.1		9.4	36	4.1	31.2		9.5		38.1	14.5	
9.2		44.8	22.2		9.4		28.5	13.4	K	8.6		30.3	23.4	K	9.5		13.7	24.7		9.3		39.5	58.2	
9.5	8	5.6	40.5		9.1		34.1	36.7		9.5		38.0	46.3		8.8		24.6	50.2		8.3		42.7	0.8	L
9.2		15.9	44.9		9.5		39.4	31.1		9.5		41.6	58.6		9.3		25.8	5.2		8.3		46.8	29.9	
9.1		16.3	24.4		9.5	18	5.0	57.9		8.8		53.5	6.6	B	8.0		26.0	9.2	K	9.4		48.2	42.2	B
9.4		42.2	46.6		9.0		16.5	0.1		9.4		57.5	21.3		9.1		37.1	12.2		8.8		50.8	18.1	
8.6		46.5	38.3		5.2		24.5	20.2	K	9.5	28	4.8	11.6		9.0		38.5	54.5		9.5		53.1	46.2	
8.8		50.9	30.7		9.5		25.7	59.5		9.5		25.2	53.0		9.5		54.4	8.2		9.0		55.3	20.6	
9.0		52.2	6.8	K	9.5		54.1	17.5		9.3		25.6	15.8		9.5	37	7.2	1.0		9.4	44	15.8	53.5	
8.6		52.4	29.8	B	9.3	19	8.4	33.3		9.3		34.3	3.2		9.5		14.7	14.3		8.5		28.9	39.2	
9.5		58.1	12.0		8.9		19.0	43.4		9.5		42.7	46.9		9.4		15.5	19.9		9.5		35.8	1.0	
8.0	9	15.9	16.6	B	9.5		50.0	18.6		9.5		46.3	8.9		9.2		22.1	44.4		9.3		40.1	15.3	
9.5		34.7	39.0		9.0		51.9	29.1		9.3		50.5	54.8		7.3		30.8	53.5	K	9.3		44.0	1.6	
9.5		40.3	30.4		9.3		56.3	22.9	B	5.8	29	5.2	8.5	K	9.3		42.7	18.0		9.2		46.1	50.3	
9.0		45.8	26.2		9.0	20	18.4	14.3	R	9.3		10.7	36.1		9.4		45.8	2.0		9.5		56.0	2.5	
9.0		46.0	50.2	K	9.5		29.9	41.5		8.3		16.0	27.9	R	9.5		49.5	39.0		9.4		59.7	49.5	
8.8		54.7	8.1	K	9.5		44.5	12.2	B	9.4		37.1	6.4		9.1	38	11.8	42.0		9.3	45	3.0	2.2	
9.3	10	22.9	42.7		9.0		50.5	38.3		8.3		42.7	44.2		9.3		19.1	53.1		9.5		4.8	13.4	
9.5		28.6	2.4		9.3		51.3	12.2	B	8.9		47.9	24.7		9.0		23.6	36.5		9.3		11.9	48.2	
9.3		43.2	56.0		8.5	21	2.8	11.6	K	9.5	30	15.3	11.3		9.5		40.4	47.7		9.4		34.7	13.2	
neb		54.5	55.0		9.5		15.2	44.3		9.0		15.8	5.2		9.4		46.3	47.8	B	9.5	46	16.5	30.3	
9.5	11	0.1	10.8		9.5		40.9	25.8	B	9.5		22.0	57.1	B	9.3		50.0	20.7		9.2		24.0	2.2	
9.5		17.9	0.2		9.3		41.7	36.7		9.2		26.3	29.8		9.2		57.5	37.5		9.4		24.6	26.8	
9.5		28.5	45.8		9.5		42.7	23.8		9.2		29.5	50.8		8.2		58.8	24.9		9.4		31.3	41.9	
8.7		32.7	34.3		8.9		43.4	10.3	B	9.5		31.1	13.5		8.6	39	11.5	24.9		8.9		52.1	40.4	
9.1		42.8	48.1		9.5		55.1	31.3		9.5		35.2	1.9		9.1		16.3	46.9		8.3	47	4.1	49.1	
9.4		46.4	14.5		9.5		56.3	18.7		9.2		36.5	15.0		8.1		17.1	14.5	K	9.5		6.2	7.0	
9.5	12	15.1	39.8		9.4	22	3.4	55.2		9.4		37.0	46.4		9.5		28.6	17.9		9.5		8.0	4.7	B
9.1		18.5	47.3		9.3		15.0	2.7		9.1		42.6	43.9		9.5		30.7	44.6		9.4		9.7	58.9	
9.5		21.1	38.2		9.5		21.6	33.0		9.5	31	1.0	8.5		9.3		31.1	29.5		9.5		14.1	2.9	
8.8		21.6	31.6	B	8.5		27.2	23.9		9.5		11.2	42.2		9.5		40.8	47.0		9.2		23.0	54.8	B
9.4		37.8	21.6		7.0		29.3	9.3	K	9.3		17.8	42.9		9.3		50.7	39.5		9.4		30.0	2.3	
8.0		46.5	41.6	K	8.6		57.1	54.5		6.8		23.2	0.7	B	8.3		57.5	54.3		9.2		32.1	0.3	B
9.2		47.1	28.5		9.3		59.0	5.9		9.5		27.1	6.3		9.4	40	0.4	58.7		9.1		52.1	28.0	K
9.4		50.4	21.1		9.0	23	1.9	18.7	K	7.5		43.8	16.9	L	9.3		8.2	54.8		9.5	48	5.5	57.1	
9.5		56.3	37.6		9.4		31.1	24.9	B	8.5		57.2	4.1	K	8.5		18.5	23.9	K	9.0		31.4	47.5	
9.5	13	14.6	26.1		9.2		47.3	42.9	K	9.5		58.5	53.7		9.0		27.0	1.7		9.3		32.8	18.2	
9.4		23.4	58.8	B	9.5		52.7	34.6		9.4		59.0	0.8		9.5		28.0	3.3		8.2		35.4	38.4	K
9.5		39.4	58.0		9.5	24	12.7	19.2		9.3	32	14.6	55.6		8.8		39.2	48.8		9.4		42.7	1.0	
9.5		48.4	19.7		9.0		15.3	0.8		9.4		19.6	49.0		9.0		50.7	41.8		9.2		52.6	18.0	
9.4	14	3.9	38.5		8.8		26.5	46.9	K	9.3		20.2	53.5		8.8		55.3	6.1		9.5	49	3.2	18.5	
9.5		26.2	41.5		9.5		33.0	24.4		9.5		23.8	51.9		9.2	41	1.5	21.4	K	8.4		8.1	46.1	K
9.0		40.1	25.7		9.0		54.2	36.5		9.5		27.9	36.0		8.4		3.7	10.8		9.5		11.4	27.5	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ʰ		+29°		19ʰ—20ʰ		+29°		20ʰ		+29°		20ʰ		+29°		20ʰ		+29°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.1	49	18.1	42.4		8.5	56	4.3	29.2	9.4	4	14.3	15.4	9.4	12	8.2	11.4	8.8	21	50.6	28.2	
6.9		19.9	49.0	K	9.5		5.7	24.9	9.2		16.8	5.7	9.1		18.1	59.2	9.3		54.1	44.0	
9.2		28.5	44.0		9.1		10.3	10.9	K	9.5		23.3	48.7	9.1		29.8	35.4	8.9		55.5	38.3	
9.5		30.2	19.9		9.0		28.7	44.0		8.7		23.3	12.9	L	8.1		33.0	55.1	K	8.2	22	5.3	39.1	L
8.1		31.6	36.5	K	9.1		37.5	40.2		9.4		32.4	29.0	B	9.4		33.4	40.3		9.1		17.4	20.8	
9.3		36.3	58.5		9.4		41.4	5.7		7.7		41.7	50.3	K	9.5		54.1	57.8		9.2		17.4	6.2	
9.3		40.9	12.2		8.9		50.3	14.1	K	9.2	5	5.1	21.5		9.5		56.4	39.1		9.5		21.3	55.2	
9.5		43.3	3.5		9.5		50.8	34.3		8.0		11.2	16.6		9.4		59.4	13.5		9.2		38.0	16.6	
7.9		46.0	8.0	K	9.5	57	12.9	49.5		9.5		13.2	29.4		7.2	13	14.8	2.8	K	9.5		43.7	45.2	
9.4	50	0.0	4.0		9.2		13.3	37.3	K	9.1		19.3	55.1	K	8.9		27.6	28.9		9.5		43.8	50.3	
8.9		18.6	26.8		8.5		34.2	33.0	K	8.7		23.4	3.5	B	9.3		39.0	28.7		9.0		45.6	32.6	
9.3		20.8	33.7		6.0		40.1	30.6	B	9.5		44.1	42.2		6.8		55.2	16.4	K	8.3		58.4	28.9	
9.5		28.2	37.8		7.5		53.3	34.6	K	9.4		47.7	18.0		9.3		56.4	59.2	B	9.0	23	7.3	27.1	
9.5		51.6	35.9		9.5		56.3	20.7	B	9.3	6	12.0	51.2		9.0	14	12.1	59.1		9.4		12.7	42.2	
8.5	51	0.0	8.9	K	8.3		59.2	38.5	K	8.9		28.6	56.1	K	8.5		27.8	24.7		8.9		15.5	55.6	K
8.8		2.1	33.4		9.1	58	17.8	45.9		9.5		47.9	7.6		9.5		32.0	45.4		9.2		23.0	19.0	
9.0		3.6	24.8		9.2		19.4	24.0		9.5		50.7	58.8		8.4		36.4	31.1	B	4.2		28.9	52.7	K
8.8		21.7	33.2		9.5		27.5	21.0		9.3		52.1	18.3		9.4		41.5	50.7		9.4		29.3	30.4	
9.2		21.9	55.6	B	9.2		29.0	8.4		9.4		54.8	56.9		9.5	15	8.8	2.7		9.0		38.1	11.1	B
8.2		24.0	25.8		8.9		34.6	2.2		8.8		56.3	51.4	K	9.5		21.8	55.1		9.1		40.6	10.9	B
9.4		39.8	55.6	B	9.5		40.1	29.2		9.5	7	3.3	10.1		8.0		26.3	44.4	K	9.5	24	7.1	59.9	
9.4		46.5	14.2		9.0		45.3	51.4	K	9.5		36.5	45.3		9.4		31.0	39.3	B	9.5		15.3	9.6	
9.3		51.9	8.8		9.5		51.3	34.8		9.5		57.0	18.5		8.9		32.1	54.1		9.5		15.4	0.4	B
9.2		54.4	18.2		9.3		51.9	40.8		9.4		57.6	16.1		9.5		36.5	2.5		9.5		44.3	16.9	
9.3	52	3.0	57.0		9.3		59.2	3.2		9.1	8	14.8	55.2		9.1		54.7	1.1		9.5		47.7	54.1	
9.4		7.9	24.9		9.4	59	18.6	56.7		9.0		17.7	12.6		9.4		59.8	41.9		9.4		52.7	51.5	B
9.5		9.4	44.4		8.5		38.4	27.4		9.0		19.2	2.0	K	9.5	16	5.9	13.9		8.7		57.9	47.7	K
9.5		34.1	46.6		9.5		43.8	56.1		7.0		25.8	46.2	K	9.5		16.4	56.1		9.5	25	11.8	42.2	
7.9		48.3	32.9		8.1		53.5	54.8	K	8.7		47.0	59.9		9.2		18.0	48.2		9.4		13.5	2.1	
8.8	53	6.3	58.5	B	8.9		56.5	17.1		9.3		47.9	19.5		8.7		20.1	0.0		8.3		19.6	14.4	B
9.3		16.2	17.0		9.0		59.3	20.8		9.5		59.6	5.2		8.2		25.8	39.2	B	9.5		30.4	25.2	
9.2		17.9	53.4		8.8	0	1.3	20.8		8.8	9	2.3	26.9	K	9.5		43.1	58.8		8.9		46.2	36.6	B
9.5		18.2	7.4		8.5		3.0	4.2		8.9		4.2	31.7	K	9.4		47.3	2.7		9.2		47.2	38.0	
9.5		30.0	30.9		9.5		15.9	31.6		9.2		6.0	40.8		9.0	17	5.3	4.9	K	7.5		47.6	45.9	K
9.5		35.1	12.3		9.5		41.0	35.1		9.3		14.7	44.4	B	9.3		10.9	36.8		8.9	26	0.3	0.8	K
9.2	54	1.0	21.2		9.5	1	8.4	43.2		9.3		17.1	52.1		9.5		20.8	1.5		9.5		24.1	35.0	
9.2		1.0	32.6		8.8		9.5	18.3	K	9.4		19.0	44.6	B	9.2		21.3	6.5		9.5		48.7	6.5	
7.0		26.3	30.9		9.4		33.3	21.3		9.4		25.3	44.5	B	9.3		21.8	13.9		9.0		51.6	51.6	
7.4		29.4	25.2		9.5		37.6	58.7		8.0		28.0	34.5	K	9.3		31.0	38.6		9.5		55.0	37.3	
8.5		31.9	5.7		9.3		40.8	30.1		9.5		42.0	0.2		9.3		31.2	52.1		7.5	27	23.5	2.0	L
9.3		35.2	16.3		9.1		46.2	10.9		9.5		51.3	9.0		9.5		52.6	0.6		9.2		30.0	7.0	
9.5		46.1	58.8		9.4		46.3	43.5	B	9.4	10	13.3	4.2	B	9.5	18	8.8	46.7		8.9		30.1	16.9	K
9.3		47.0	36.0		9.5		57.9	47.5		9.4		28.3	12.1		9.1		15.4	29.9		9.3		49.8	37.8	
8.2		48.4	29.6	B	9.5	2	3.1	2.7		8.6		28.3	19.5		9.3		35.7	18.5		9.5		53.4	21.3	
8.1		56.5	25.8	B	9.4		13.3	30.5	B	9.2		33.9	49.2		8.8		50.1	8.6		8.3		58.4	11.1	K
9.5		56.5	34.3		9.5		25.0	12.6		9.3		36.3	28.8	B	9.5	19	11.3	41.9		9.5	28	17.6	58.0	
9.5	55	1.3	48.9		9.0		27.3	24.0		9.4		51.5	8.5		8.8		17.2	17.3	R	9.5		47.7	26.2	B
9.3		5.4	15.8		8.8		31.7	34.3		8.0	11	5.6	40.0		9.1		32.9	33.6		9.4		47.9	55.1	
9.4		9.9	32.0		8.3		34.1	52.3		8.4		5.7	45.3		9.4		45.0	53.3		9.5		58.2	39.3	
9.5		18.7	47.5		8.8		49.6	55.2		8.9		14.0	2.1		9.5		47.8	34.8		9.4	29	4.4	28.0	
9.0		24.9	10.6	K	8.7	3	4.3	43.5	K	8.8		14.4	44.4		9.4	20	7.6	55.9	B	8.9		7.5	30.7	
9.1		25.2	34.8		9.5		9.4	22.5		9.5		14.8	56.7		9.3		8.3	5.7		7.8		10.3	45.7	K
9.5		31.5	42.0		9.5		16.2	29.9		8.7		15.3	40.3		9.5		22.2	45.7		9.5		11.1	48.7	
9.5		36.4	19.3		9.5		27.1	43.7		9.5		17.8	59.4		9.3		29.4	56.0	B	9.0		15.3	53.1	
8.5		38.8	37.6		9.4		28.3	48.2	K	9.3		21.8	51.5	B	9.4		39.9	40.4	B	9.1		21.3	37.3	
9.3		41.4	10.7		9.2		33.0	37.5		9.1		35.0	17.1		9.2		52.1	40.5	B	9.4		40.9	15.4	
8.1		42.3	48.7		9.4		43.2	37.0		7.8		39.3	52.1		9.4	21	1.5	6.7		8.6		59.8	55.6	K
8.6		50.8	7.0	K	9.0		44.3	47.4	K	9.5		52.0	32.4		7.5		4.0	53.6	K	9.5	30	11.3	48.7	
8.9		54.9	26.5		8.0		50.4	18.0	L	9.5	12	1.7	18.4		9.5		6.5	4.5		9.5		14.3	40.0	
9.0		56.6	57.3		8.6	4	10.5	18.5	L	9.5		7.4	41.5		9.4		46.8	53.1		9.5		14.8	30.1	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵘ	+29°			20ᵘ	+29°			20ᵘ	+29°			20ᵘ—21ᵘ	+29°			21ᵘ	+29°	
m				m				m				m				m			
9.3	30′ 18.9	45.2		9.5	39′ 7.3	42.0		6.6	47′ 2.3	6.7	K	9.5	55′ 28.4	33.4		9.5	5′ 21.1	46.5	
9.5	50.5	25.2		9.5	9.2	51.8		9.3	26.1	30.0		7.8	36.0	4.0	L	6.8	37.8	7.2	K
9.3	57.7	56.4		9.0	9.3	44.5	B	9.5	33.2	52.1		8.5	41.8	58.6		9.0	46.3	24.5	
9.5	58.3	19.7		8.3	9.7	23.4	K	9.5	35.2	19.4		7.5	56 10.3	57.1	K	8.9	6 25.7	55.1	
9.2	58.7	2.5		9.3	13.0	35.0		9.5	42.6	55.5		8.8	51.5	30.5		9.5	33.2	51.2	
9.5	31 9.8	47.7		9.1	13.2	26.0	B	9.0	48 4.0	8.8		8.4	52.2	24.0	K	9.2	39.4	7.6	
9.5	20.2	6.2		9.0	18.0	44.6	B	8.9	4.9	10.4	B	9.3	57.6	2.7		8.2	40.0	59.0	
8.7	28.4	27.1		9.5	46.0	54.1		9.2	16.3	7.2		9.4	57 8.8	38.2	B	3.0	46.3	37.8	K
8.6	32.6	59.0		9.5	57.9	16.0		9.5	23.7	38.8		9.5	10.5	50.8		7.9	58.3	25.4	B
8.5	34.1	40.3		9.5	40 2.8	0.7		9.5	35.3	16.1		9.5	14.4	45.4	B	9.0	7 6.4	4.7	
9.5	40.3	33.6		9.5	13.3	7.6		9.5	49 2.1	51.8		9.4	23.7	21.3	B	9.4	9.0	12.6	
8.0	49.8	12.9	K	9.1	13.8	1.6	B	9.5	7.6	32.4		8.7	24.3	54.8		9.5	30.3	5.7	
9.4	53.6	0.5		9.5	17.0	39.3		9.5	7.8	46.7		9.2	27.5	12.9		9.5	55.0	51.1	
9.2	56.5	57.5		9.4	23.2	53.8		8.9	16.8	12.6	K	9.4	37.8	54.6		7.0	57.8	17.8	L
9.0	32 3.7	27.4		9.4	26.5	2.3		9.5	25.7	59.7		9.5	53.6	11.1		9.4	8 1.1	21.9	B
8.5	7.9	22.8		9.0	30.6	9.1		9.3	35.5	26.9		9.0	56.5	27.1		8.3	11.2	31.6	
9.2	28.5	14.2	B	9.2	41 3.4	55.6		9.3	37.1	44.7		9.4	58 0.3	27.4		9.3	13.7	10.0	
9.5	29.3	15.2		8.9	25.3	52.1		9.2	39.5	30.2	B	9.5	37.2	45.0		9.4	57.3	52.1	
9.5	30.5	14.3		9.5	28.3	44.2	B	9.2	50 4.2	20.0		9.5	40.0	54.8		9.1	59.4	15.8	
9.5	33 0.1	14.3		9.4	42.3	9.1		8.3	17.3	44.2	K	9.1	43.3	27.7		9.5	9 8.2	38.3	
6.5	1.3	49.6	L	8.0	44.1	6.3	B	9.3	26.9	39.3		9.5	56.5	13.1	B	9.4	10 15.0	5.9	
9.5	6.8	30.9		8.9	45.2	33.4		9.1	29.5	15.1		9.5	59 19.3	50.7		9.3	19.7	8.9	B
9.5	16.8	6.7		9.4	54.5	59.9		9.3	32.0	43.2		9.3	24.5	39.8		9.4	24.7	25.2	
7.8	36.8	59.6	K	9.3	42 3.3	38.8		9.5	40.4	53.6		8.8	25.9	6.7		9.2	28.2	19.4	
9.5	37.7	6.2		9.3	8.0	35.4		9.4	40.8	39.1	B	9.5	27.8	0.7		8.8	44.7	37.1	
9.5	34 2.9	39.5		9.5	14.3	12.6		9.3	43.9	8.5		9.4	31.3	54.6		8.8	11 16.9	3.3	K
9.4	9.0	36.0		9.2	23.8	34.5		9.5	51.8	58.9		8.3	41.3	38.4	B	9.3	19.6	6.3	
9.0	15.2	16.1	K	9.5	39.3	11.1		9.2	52.0	53.0	B	9.0	54.1	53.1		9.1	23.8	4.8	B
9.5	27.5	2.7		9.5	39.7	6.7		8.7	51 24.1	15.9		9.4	59.2	19.5		9.5	32.6	12.1	
9.5	35.5	51.0		9.5	43.1	53.9		9.2	31.5	37.7		9.5	0 6.3	24.5		9.4	43.2	17.5	
6.5	35.7	17.5	K	9.5	45.6	20.2	B	9.0	31.8	57.9		9.5	8.3	1.1		9.4	48.3	12.4	
9.5	40.8	48.6		9.4	50.6	6.2		9.4	45.7	37.2	B	9.5	11.3	13.6		7.9	49.4	44.3	K
9.3	41.2	35.3		8.7	53.1	0.0	B	6.7	52 11.2	50.2	K	8.7	16.8	41.5		9.5	58.0	54.8	
9.0	51.4	47.2	K	9.5	43 16.3	25.0		8.1	16.3	7.2	K	9.0	29.3	24.5		7.6	12 0.4	58.7	K
8.7	35 17.3	40.3	K	8.5	42.4	28.3		8.7	24.6	36.8	B	8.7	43.8	52.1		9.5	10.0	56.2	
9.5	22.5	41.7		9.4	44 4.8	54.3		8.5	25.0	50.2		9.3	50.5	15.6		8.6	11.8	3.1	B
9.3	25.6	31.0		9.0	9.1	32.6		9.4	26.1	0.7		9.4	53.1	26.2		9.5	44.4	49.1	
9.5	27.7	12.6		9.5	13.3	1.2		9.5	45.7	54.8		9.5	1 12.2	28.1		7.4	48.5	8.1	K
9.4	30.8	4.2		9.3	28.8	36.3		9.5	47.5	48.4		9.3	16.1	28.7		9.5	58.2	23.0	
9.3	33.2	59.4		8.3	32.0	26.4		9.5	48.4	12.3		8.8	34.0	47.7	K	9.0	13 6.8	5.0	K
9.2	34.2	29.0		8.0	35.1	52.3	K	9.3	48.9	43.6	B	9.0	37.3	11.4		9.3	14.4	48.7	
9.5	48.1	54.8		8.8	40.0	15.9	B	9.1	54.8	15.6		8.9	47.0	37.8		9.0	23.1	58.3	B
9.3	51.3	23.0		9.4	45.3	38.3		9.5	53 7.0	54.8		9.5	2 10.7	24.2		8.2	30.5	25.4	K
9.5	36 12.0	7.6		8.8	46.7	45.2		9.1	18.2	1.5		6.1	30.0	37.2	K	9.4	50.9	30.7	
9.4	12.3	56.4		9.4	49.1	16.4		9.1	22.3	11.1		9.4	31.1	23.0		9.4	14 19.8	37.6	
8.3	26.8	44.9	K	9.3	57.0	34.1		9.4	25.7	44.7	B	8.4	34.2	8.1		8.6	23.4	30.5	K
9.5	58.7	36.0	B	9.5	45 4.8	20.9		9.5	35.5	28.7	B	9.5	39.7	39.3		9.5	25.0	41.8	
9.2	37 8.1	56.6		9.3	7.2	2.7		9.5	54 2.6	24.1	B	9.6	49.9	0.1		9.5	27.9	25.8	
8.5	21.3	41.3	K	9.5	13.3	22.8		9.5	4.1	4.2		8.0	3 1.8	47.4	K	9.5	32.5	33.2	
9.5	38.8	5.7		8.5	16.7	2.5	K	9.1	19.8	47.4		8.7	10.5	53.1		9.1	54.6	42.1	K
9.4	44.5	52.5		9.4	28.1	58.3		9.5	21.3	31.4		9.5	16.3	18.4		8.4	57.7	39.2	K
9.5	50.9	33.4		9.4	42.3	6.7		8.5	27.3	11.6	K	9.5	40.6	27.9		9.5	15 24.0	44.0	
9.5	38 2.4	4.9		8.7	52.6	31.1	K	9.5	31.2	48.5		9.5	47.2	57.1		9.5	43.2	37.9	
9.5	20.0	0.7		9.0	46 1.3	21.8		9.5	53.7	25.4		9.4	55.5	51.3		9.5	56.4	2.1	
9.4	22.3	21.8		9.4	19.4	1.5		9.5	56.3	52.1		9.3	4 23.8	21.4	B	8.3	16 7.4	25.0	
9.0	28.2	11.4		9.1	20.9	39.3	B	9.5	56.9	56.1		9.5	24.7	22.0		9.1	21.0	20.3	
9.5	31.4	41.3		8.8	23.3	49.0	K	8.4	59.8	14.6		8.8	26.4	6.2	K	6.5	28.2	42.0	K
9.4	46.5	4.7		8.3	25.5	41.9	K	9.5	55 10.3	31.9		9.2	32.9	37.5		9.5	40.4	46.0	
9.3	49.6	30.4		9.5	37.7	33.9		9.4	19.8	50.2		8.9	44.8	16.1	K	9.2	41.1	42.0	B
9.1	50.9	50.2		9.5	47 0.5	43.8		9.5	22.5	44.0		8.6	46.3	58.3	K	7.7	53.4	1.6	K

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ᵘ		+29°		21ᵘ		+29°		21ᵘ		+29°		21ᵘ—22ᵘ		+29°		22ᵘ		+2
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	
9.2	16	59.8	5.9	9.2	30	39.0	40.3	9.0	42	54.4	1.0	K	9.5	59	9.2	33.9	9.5	14	40.5	54
9.4	17	2.2	15.1	9.5	31	7.9	32.7	B	9.5		56.3	51.2		7.6		12.3	12.1	K	9.4		49.5	15
8.0		4.0	11.0	K	9.5		28.6	8.3	9.5	43	7.3	18.6	B	9.5		25.8	49.2		9.4		59.9	40
9.5		20.6	55.2		8.1		40.2	12.8	K	8.9		12.3	26.5	K	9.0		57.9	5.0		8.6	15	38.8	40
9.4		28.9	31.6		9.5		52.8	30.0		5.3		27.2	30.0	K	8.3		59.2	52.2		7.5		55.2	3€
8.5		32.4	0.3	K	9.2		53.3	45.1	B	8.2		35.2	6.6	K	7.2	0	36.8	36.2	K	8.8	16	36.3	2€
9.0	18	16.0	38.3		9.0	32	2.5	55.5		9.2		44.1	41.8	R	9.1		39.0	38.8		9.0		55.0	1
9.5		21.5	26.9		9.5		13.6	47.6		9.3	44	16.4	50.2		9.5		39.5	53.5		8.6	17	1.5	4
9.5		49.3	42.3		9.5		13.8	11.2		9.2		38.5	42.0		9.2		40.7	57.5	B	9.5		3.6	2
9.4	19	10.6	48.5		9.5		15.6	16.9		9.2		40.3	35.1		9.4		53.6	34.1	B	9.4		13.1	
9.3		19.3	54.8		9.5		26.8	41.7		9.0		47.4	5.4		9.5	1	18.9	50.8	B	9.5		53.7	1
9.4		51.9	57.6		9.5		47.7	0.8		9.2	45	21.8	16.6		9.5		29.7	22.1	B	8.9		56.2	4
9.5	20	2.7	44.0		9.4		54.2	15.2		8.6		24.5	57.2	K	9.4	2	33.3	11.4		9.2	18	16.0	4
8.8		3.5	56.3		8.5	33	9.6	30.1	B	9.2		39.4	35.2		9.3		34.3	50.0		9.1		27.3	2
9.5		9.2	58.3		9.0		14.2	53.7		8.3		41.4	31.2	K	8.8		55.3	50.0	K	9.1		35.5	5
9.4		19.2	35.0		8.2		25.5	16.3	K	9.4		48.3	16.1		9.2		59.2	59.9		9.4		37.1	1
9.4		36.5	27.6		9.5		47.8	46.8		9.5	46	6.0	13.5		9.5	3	13.0	39.0		9.5		51.4	
9.4	21	30.7	32.5		9.5	34	0.0	11.4		9.3	47	19.2	55.2		9.5		25.4	30.0		9.5	19	10.8	
7.5	22	12.7	35.8	K	9.4		11.4	47.7	B	8.8		40.7	26.6		9.2		34.8	45.4	B	8.8		14.0	
9.2		20.0	45.8		9.2		32.9	29.6	K	8.9		42.0	19.2		9.0		55.7	41.4	B	9.5		43.1	
9.0		29.6	19.2	K	7.7		40.6	38.6	K	8.3	48	4.6	34.0	K	9.3		56.6	54.3	B	9.5		48.5	
9.5		31.7	11.7		8.9		43.3	45.9		9.4		43.5	35.8		9.1	4	7.0	15.9	B	9.5	20	5.1	
9.5		50.0	37.5		9.3		58.8	19.0		9.0	49	25.9	55.7		9.4		15.9	7.7		8.8		14.0	
9.1		52.1	22.4		9.5		59.0	10.2		9.5		55.4	50.7		6.5		19.8	51.3	K	9.5		15.8	
9.5	23	46.2	8.8		9.5	35	26.9	42.4		9.5	50	9.0	22.1		8.8		26.8	42.4		9.5		19.9	
8.3		49.3	15.4	K	9.5		29.8	20.7		9.5		15.7	8.3		9.5		56.6	57.7		9.2		25.5	
9.5		51.1	8.4		9.5	36	9.3	40.7		9.5		57.2	51.3		8.2	6	5.3	31.6	K	8.0		27.4	
8.8	24	7.0	26.3		9.5		29.8	31.7		9.3	51	34.9	32.3		9.0		20.9	38.6		9.5		59.8	
8.3		17.8	50.4	K	9.5		43.0	48.5		9.2		43.3	59.1		8.5		36.5	2.5		9.3	21	9.6	
9.0		23.0	18.5	B	9.5		44.0	25.6		7.4	52	16.1	8.2	B	9.2		43.2	32.4	K	9.5		20.3	
9.5		34.1	12.8	B	9.5	37	3.4	17.3		9.3		22.6	37.2		8.7	7	13.1	53.8	K	9.1		40.0	
8.6		36.9	55.4	K	9.5		8.8	22.8		8.8		25.4	23.7		9.5		14.5	58.1		8.5	22	2.4	
9.1		40.0	58.1		9.5		32.0	13.8		9.4		40.6	52.7	B	9.5		53.4	7.3		8.3		14.2	
8.1		45.3	30.2	K	9.4		38.2	48.5		7.5		44.5	50.3	B	9.2	8	28.8	22.5		8.0		21.5	
7.8		51.0	38.1	K	9.4		47.4	1.7		9.2		47.4	16.7		9.5		29.2	11.0		9.3		36.0	
9.5		57.6	56.0		8.2	38	6.2	39.4	K	8.2		57.1	12.2	K	9.5		29.5	58.1		9.3		47.3	
9.5	25	28.4	0.7		9.5		20.9	49.3		9.5	53	4.3	56.6		9.2		50.2	1.5	K	7.5		50.8	
9.4		28.4	45.8		9.1		40.8	9.8		9.3		4.6	19.7		9.4		54.3	12.2		9.5	23	26.5	
9.0		57.5	54.0		8.7		43.0	44.3	L	9.3		26.0	52.5	K	9.5	9	32.0	1.7		9.4		56.6	
8.2	26	16.0	55.8	K	9.5		52.8	18.2		9.0		55.2	9.4		9.5		32.5	53.5		9.1	24	29.5	
9.0		18.6	48.2		9.5		53.3	27.9		9.1	54	2.1	14.8		7.8		40.3	20.0	K	8.3		54.1	
9.5		37.7	58.4		9.1		55.8	5.6		9.5		20.4	0.3		9.4		45.0	17.1	B	9.0		56.7	
7.7		44.8	43.9	K	9.5	39	16.8	55.5		9.1	55	1.8	33.0		9.5		49.0	15.1		9.0	25	1.8	
9.1		55.2	36.3		9.3		20.8	13.5		9.1		12.4	1.0		9.5		56.4	1.8		9.5		3.1	
9.4	27	11.0	28.8		9.0		26.2	11.4	K	9.4		25.9	36.1		7.2	10	12.1	21.8	K	9.3		8.4	
9.4		20.9	32.5		9.2		44.1	40.0		8.8	56	20.3	54.9		8.1		24.1	35.9	L	9.1		9.7	
9.5		33.2	13.5		9.5	40	8.4	52.4		9.4		28.6	59.6	B	9.4		26.9	7.6		9.5	26	13.1	
9.5		36.0	9.7		8.4		28.4	26.6	L	7.0		44.6	30.7	L	9.2		30.3	30.1	B	9.4		32.8	
9.4	28	3.2	24.0		9.5		40.3	48.5		7.7		48.8	3.6	K	9.5		38.4	17.6		9.4		33.5	
9.5		3.7	52.7		9.5		43.2	23.0		7.5		53.8	19.8	K	9.3	11	1.3	17.0		9.4		55.2	
9.5		25.0	47.9		9.2		51.6	19.9		9.3	57	2.0	30.3		9.3		17.8	40.7		9.4	27	11.9	
9.0		27.7	36.5		8.1	41	24.1	4.0	K	9.5		27.5	13.4		8.8		18.0	52.9		9.5		20.6	
8.3	29	23.8	5.6	K	9.1		43.2	57.6		8.5	58	5.3	15.1	K	9.5		43.1	45.8		9.0		25.3	
9.0		25.0	44.0		9.3		51.4	52.0		9.4		11.1	17.5		9.4	12	3.5	58.3		9.4		27.9	
9.2		52.0	58.0	B	9.3		56.3	40.3		9.2		16.0	15.5		9.4	13	3.2	13.4	B	9.5		35.6	
6.5		55.5	25.1	K	9.0	42	2.8	20.5	B	9.1		29.9	15.2	B	9.2		20.4	39.5	B	9.5		46.3	
9.5	30	8.3	57.4		9.5		9.6	40.8		9.5		33.6	57.5		9.5		35.3	44.3		9.5		53.1	
8.3		22.4	1.3	K	9.0		9.8	27.1		8.5		37.8	10.7	K	9.0		41.3	30.3	K	9.2		56.8	
8.4		26.0	12.5		9.3		20.7	6.6		9.4		52.4	38.9	B	9.0	14	0.1	14.2		6.8	28	3.6	
9.0		35.0	38.8	B	9.3		45.5	3.4		9.5	59	4.8	39.4		9.5		30.2	48.7		8.1		24.4	



5001—5013				5014—5026				5027—5039				5040—5052				5053—5064			
	23ʰ		+29°		23ʰ		+29°		23ʰ		+29°		23ʰ		+29°		23ʰ		+29°	
m				m				m				m				m				
9.4	41′	9.8	3.9	8.0	45′	40.9	54.6	L	9.5	48′	48.2	2.5		9.5	52′	49.5	30.4		9.3	55′	39.7	13.1	
8.6		10.9	44.0	K	8.9		45.2	9.1		9.5	49	3.3	23.4		9.5	53	22.2	2.0		9.5		48.8	37.6	
9.3		17.9	13.8		9.5		49.9	57.4		9.1		12.5	57.6	K	8.4		22.8	35.6	K	9.3	56	29.3	39.0	
9.4		34.3	20.4		9.5	46	1.1	25.5		9.5		23.8	37.0		9.4		24.7	31.4	B	9.5		53.9	54.9	
9.3	42	29.2	51.9		9.5		26.4	37.0		9.5		47.2	4.0		9.5		39.8	29.3		8.0	57	24.8	16.1	K
8.7		36.8	15.1	K	9.2		29.8	41.8		9.5		48.3	59.4		9.3		50.4	8.9		9.5		27.4	44.9	
9.0	43	2.9	31.7	K	8.0		32.7	57.4	K	9.5		53.1	44.9		7.8	54	4.9	55.7	K	8.2		44.3	31.4	K
9.5		4.6	5.3		9.3		41.1	50.3	B	8.4	50	42.3	8.9	L	9.4		59.5	50.5		9.5	58	24.4	6.4	
9.5	44	10.0	7.3		9.2		55.0	16.9		9.5	51	18.4	29.0		9.5	55	14.8	44.2		9.5		33.0	1.6	
9.4		16.5	5.7	B	9.2		59.9	8.5		9.1		34.6	12.7		9.5		17.2	50.6		9.5		38.3	19.0	
9.4		25.8	57.9		9.5	47	18.3	39.4		9.4		42.8	17.3		9.0		21.3	15.1	K	9.2	59	17.7	33.2	K
9.1		26.9	48.6	K	9.5	48	3.5	3.4		9.3		51.9	50.5		8.8		26.3	31.0	K	9.1		59.4	3.5	
9.5		41.0	41.7		9.5		41.8	26.5		9.5	52	23.0	6.6		9.5		34.5	43.5						

Zone +30°

1—20				21—40				41—60				61—80				81—100			
	0ʰ		+30°		0ʰ		+30°		0ʰ		+30°		0ʰ		+30°		0ʰ		+30°	
m				m				m				m				m				
6.9	0′	8.3	51.3	K	9.4	6′	10.2	16.2		9.5	12′	31.4	23.5		9.2	19′	57.1	25.4		9.0	28′	41.5	7.1	
6.8		33.6	35.4	K	9.5		25.2	34.9		6.4		51.9	8.4	K	8.9		58.1	31.6	K	8.0	29	21.1	41.5	K
7.2		43.2	33.7	K	9.5		38.8	13.4		7.9		56.4	9.5	K	9.5	20	1.2	49.2		9.5		40.0	4.4	
9.5		55.0	53.4		9.5		55.5	9.3		9.5	13	41.2	12.6		9.5		40.0	56.9		9.4	30	16.2	32.5	B
9.5	2	24.9	56.9		9.5	7	16.4	54.8		9.4	14	43.3	36.4		9.5	21	40.8	22.4		9.4		26.7	45.1	B
9.3		27.4	36.2		6.5		35.3	43.8	K	9.3	15	15.5	23.4		8.9	22	30.5	47.1	K	9.5		26.8	56.5	
9.5		31.8	51.4		9.3		36.6	27.4	B	9.5		16.6	1.3		9.3		55.1	29.1		9.4		30.7	18.8	
9.4		46.7	1.2		9.5	8	11.7	1.0		9.5		25.1	53.8		9.5	23	24.8	48.8		9.5		50.3	43.0	
9.0		46.9	39.0	K	9.5	9	11.6	57.5		9.5		28.5	8.5		9.5		45.0	3.4		9.0	31	6.2	12.7	K
8.9	3	5.1	9.9	K	9.5		30.2	44.5		9.5		43.4	32.7		9.5		46.9	35.4		9.3		20.6	12.2	
9.5		7.4	50.7		8.0		35.1	15.5	K	9.3	16	14.0	56.1	K	9.1	24	0.3	57.2	K	3.3		34.7	3.9	K
9.4	4	17.6	25.9		9.4	10	15.2	46.9		8.9		28.1	21.6	K	9.5		7.6	3.9		9.4		38.3	16.0	
9.5		22.7	26.2		8.4		26.8	29.3	K	9.2		49.8	35.7	K	9.5		47.4	18.1		9.0	32	39.9	58.3	K
9.4		23.8	30.0		8.6		45.9	9.2	L	9.5	17	2.6	4.4		9.5	25	14.0	39.0		8.8		48.7	45.9	K
9.5		44.5	30.0		6.0	11	6.6	43.4	K	6.8		3.5	34.3	K	9.5		15.8	24.4		9.5	33	2.7	40.7	B
9.1	5	7.1	47.8	B	8.5		8.4	0.7	K	9.4		45.4	5.5		9.5		46.5	54.2		8.0		7.6	19.3	K
9.0		15.2	30.3	K	9.5		53.7	20.0		9.0	18	21.8	29.5		7.5	26	30.1	50.2	K	9.5		32.9	14.3	B
9.5	6	2.6	46.5		9.5		55.6	53.7		8.8	19	19.2	9.9	K	9.3		57.0	51.8		9.5		42.8	13.8	B
9.5		5.3	5.0		9.3	12	17.2	3.0		7.8		31.3	22.4	K	9.5	27	1.6	5.8		9.5	34	5.2	20.6	
9.5		8.1	9.5		9.5		19.5	46.4	B	8.5		46.9	6.5	K	9.5		23.9	36.5		9.5		21.4	27.3	

101—160				161—220				221—280				281—340				341—400			
	0ᵘ		+30°		0ᵘ—1ᵘ		+30°		1ᵘ		+30°		1ᵘ—2ᵘ		+30°		2ᵘ		+30°	
m	°	′ ″	′		m	° ′	″		m	°	′ ″		m	°	′ ″		m	°	′ ″	
9.5	34	35.1	14.8		9.5	58	0.2	21.2	9.3	17	50.4	24.6	9.5	40	50.0	51.1	9.5	1	11.5	7.8	B
9.5		36.3	39.8		9.5		1.7	50.8	9.5	18	23.2	1.1	8.5	41	19.9	31.9	K	9.1	14.2	55.5	K
9.5	35	0.7	50.7		9.0		18.9	33.0	K	9.5		30.4	41.0	9.5		42.7	21.2		9.5	29.2	26.2	
9.3		45.2	51.7		8.6		31.7	20.6	L	8.5	19	32.7	20.8	B	9.5		51.2	2.2		9.3	31.7	30.0	B
8.9	36	23.1	7.0		9.3		49.2	19.9		9.5		33.9	29.4		9.0		57.0	38.7	B	9.5	2	14.7	27.4	
9.1		30.6	36.3	B	9.1		58.7	22.3	K	9.5		55.4	32.4	B	8.5		57.9	40.2	K	9.5		43.4	21.6	
8.8		30.7	35.3	K	9.5	59	10.7	53.2		9.3	20	24.1	20.2		8.0	42	7.2	5.4	K	6.5		59.1	50.3	L
9.5		30.9	55.4		9.5		48.6	52.9		9.2		32.2	50.7		8.1		10.5	10.7	K	9.3	3	37.0	54.8	
9.5	37	23.6	27.0	B	9.4		55.9	25.4		9.3	21	14.7	7.2		9.5	44	6.8	41.8	B	9.4	4	14.7	23.3	
8.5		41.1	50.9	K	9.4	0	6.5	16.5		8.3		20.5	8.2	K	9.5		7.9	51.6		9.5		23.8	32.2	
9.5	38	16.5	15.9		9.5		40.7	19.5		9.5		37.8	56.3		9.3		11.8	41.6	B	9.5	5	29.4	58.5	
9.0		29.5	54.8	K	8.5		47.2	55.1	L	9.3		40.4	17.3		8.7		17.9	44.9	K	9.4		35.5	53.2	
7.8		38.4	9.2	K	9.4		58.5	59.8		8.1		41.6	14.9	K	9.3		53.4	56.0	K	9.2		38.7	9.3	
8.0		41.6	9.6	K	9.5	1	13.1	12.3		9.0		45.2	3.6	K	9.1	45	25.9	21.0		7.3		54.2	3.3	K
9.5		43.7	33.7		9.5		26.8	5.2		9.4	22	28.5	36.2		9.5		26.7	35.2		9.4	6	10.1	25.3	
9.5	39	39.8	31.9		9.4		42.7	3.0		9.5		50.4	19.7		9.4		55.0	38.2		9.2	7	0.7	43.9	
8.6	40	22.4	25.4	K	8.4	2	5.2	12.3		9.4	23	16.0	34.5		9.2	47	23.5	34.8	B	9.4		6.4	11.3	
9.5		32.7	33.7		9.4		11.7	27.0		9.5	24	1.0	0.0	B	8.2		27.7	55.6	L	8.9		38.4	28.1	
9.4		33.0	6.3	B	9.5		14.6	41.0		9.5		55.6	51.5		8.9		39.5	2.3		9.4		45.8	57.4	
9.5	41	34.4	49.1		9.0		51.2	34.3		8.9	25	14.5	11.7	K	9.5		54.6	20.5		7.4		53.8	22.2	K
9.0	42	2.2	46.0	K	5.5	3	7.6	39.5	K	9.5	26	29.5	6.5		9.3	48	35.8	18.8	B	9.3	8	21.3	48.0	B
9.5		43.3	22.8		8.3		10.7	10.4	K	9.5		50.4	50.4		9.3		39.0	12.9		8.5		28.4	20.1	K
9.5	44	0.4	56.0		9.3		35.1	50.4		9.3		56.8	1.5	K	7.8		42.1	18.8	K	8.5		55.7	46.2	K
9.0		12.2	29.2		9.5	4	31.7	54.3		9.4	27	6.7	23.3	B	8.0		52.7	21.6	K	8.8	9	1.3	59.4	K
8.0		48.4	40.5	K	9.5	5	24.0	11.0		8.6		15.8	1.7	K	9.0		54.2	46.3		9.2		2.4	15.0	K
9.0		48.7	12.7		8.5		46.2	27.5		8.4		18.2	33.6	S	8.5	49	1.5	45.6	B	9.5		20.7	27.7	
7.5		52.6	35.6	K	9.5	6	3.5	11.3		9.4		42.5	0.4		9.0		11.4	51.5	S	9.0		28.9	35.0	
9.1		55.7	15.8		9.4		37.9	26.4		9.5	28	4.0	26.8		8.9		22.1	52.5		9.4		56.7	21.9	
9.3	45	20.9	57.3		8.9	7	5.1	24.9		9.4		49.9	23.3		8.6		26.4	12.0		9.2	10	34.1	27.3	
9.2		31.7	45.0		8.8		32.2	46.1	K	9.4	29	28.5	50.1		7.0		44.1	26.0	K	9.5		53.4	46.0	
9.4		50.4	59.5		9.3		59.4	2.0		9.4		41.5	34.3		9.4		46.1	34.8	B	9.5		57.0	57.5	
9.4	46	7.3	53.5	B	9.5		59.6	18.3		8.0		49.7	2.8	K	9.1	50	54.5	21.2		7.3	11	21.5	40.8	L
9.4		37.2	28.5		9.5	8	23.9	47.2		9.4		58.4	43.5		9.5	51	13.2	1.3	B	8.4		22.3	7.2	B
9.5		58.5	38.4		9.5		41.3	35.9		9.0	30	5.9	38.0	K	8.9		39.4	38.8	K	8.9		34.0	9.5	
9.1	47	20.0	44.8	B	8.2	9	0.0	59.9	K	9.4		18.9	56.9		9.5		42.5	54.4		9.5		37.2	2.9	
9.5	48	28.2	35.0		6.8		23.1	59.5	K	9.1		30.5	25.7		8.5		57.8	59.7	L	9.5		43.6	2.6	
9.4	49	0.6	49.7	B	9.5		55.3	32.4		7.8		39.4	54.2	K	8.5	52	9.4	38.8	K	9.2	12	10.6	59.9	
9.3		15.7	4.1		9.3	10	59.8	53.0		9.2	31	50.2	53.4	K	9.1		31.8	58.5		9.2		34.4	10.6	
9.3		21.7	7.6		9.0	11	43.8	42.0	K	9.1		59.5	33.5		9.2		48.7	47.1	K	8.3		35.7	1.4	K
9.2		25.2	39.5	B	8.8	12	9.0	54.4	K	9.1	32	5.7	59.6	K	8.6	54	2.8	51.8	K	8.9		53.4	8.5	K
9.5	50	30.1	51.2		8.6		13.1	46.6	K	9.5	33	39.5	8.9		9.5		34.8	56.2		9.5	13	5.1	0.7	
8.5		33.4	19.2		9.3		43.3	22.2		8.6		59.4	24.0	K	9.2		46.3	48.0		9.5		8.7	28.0	
9.4		47.5	49.0		9.4		54.4	50.7		9.3	34	26.5	42.5		9.2	55	24.7	27.4		9.5		10.2	57.0	
9.3	52	39.7	29.1		9.2		59.9	44.1		7.8		41.5	18.1	K	8.6		28.9	41.2		8.4	14	0.6	51.9	K
9.5		41.7	31.9		9.5	13	18.1	50.0		9.5		55.0	47.1		9.5	56	4.7	58.9		9.5		1.5	6.7	
9.2	53	43.9	0.3		8.8		19.7	35.2	K	9.5	35	27.1	40.5		7.8		22.8	0.6	K	9.5		14.4	48.5	
8.0		45.9	17.9	L	8.9		28.9	11.4		9.5		47.3	43.9		8.3		27.9	21.4	K	8.9	15	36.9	1.1	K
9.5	54	49.7	29.2		9.0		48.1	12.2	B	9.1		50.6	13.0	K	8.3		32.0	28.8	K	9.5		59.8	57.5	
9.0	55	0.4	48.1	L	9.5		50.5	7.6		9.5	37	16.5	57.7		9.5		44.5	37.3		9.4	16	22.3	14.3	
9.2		1.8	58.0		7.6	14	6.8	56.6	K	9.1		17.7	18.9	K	9.3	57	13.9	17.1		9.3		32.7	53.6	
9 3		34.8	18.0		9.5		10.6	26.4		9.0		53.0	46.3	K	9.5		29.0	5.6		8.8		37.5	38.3	K
9.1		39.7	20.0	B	8.6		14.6	13.9	K	9.0		58.2	2.0	R	9.5		41.3	51.5		9.5	17	10.3	54.8	
8.8		49.6	24.7	K	8.6	15	29.6	10.9	K	8.3	38	24.1	4.9	K	8.4		51.8	17.8	L	7.8		33.0	15.1	B
8.9	56	1.7	12.7		9.0		52.3	21.2		9.1		29.7	22.3		9.5		54.6	33.4		9.5	18	4.6	25.6	
9.3		5.9	56.8		9.5	16	5.6	9.3	B	9.5		43.9	10.1		9.5	58	49.5	20.8		8.8		19.6	6.8	K
7.8		10.2	43.6	K	9.1	17	20.8	25.4		9.5	39	22.1	4.8		9.5	59	1.0	5.5		8.0		33.3	32.8	K
9.4		19.1	46.4	B	8.3		24.8	24.2	B	9.3		45.9	39.4	K	9.2		59.6	48.7						
9.1		23.2	39.5		8.1		26.2	47.7	B	9.4		48.6	8.0		9.4	0	5.1	42.0	B					
9.2	57	35.7	28.8		8.0		30.5	47.4	B	9.5	40	7.2	49.7		9.1		25.8	4.8	K					
9.5		48.1	4.2		8.7		30.9	34.2	L	8.3		13.1	3.3	B	9.5		33.7	28.1						

401—460

	2ª		+30°	
m		′ ″	′	
9.5	21	49.0	18.2	
9.5		59.5	55.4	
9.0	22	32.5	0.3	B
8.2	23	0.2	51.9	K
9.2	24	5.8	13.8	
9.3		13.9	19.0	
9.3		25.0	40.6	
9.2		43.5	33.8	K
7.5		58.2	46.6	K
7.5	25	18.6	57.8	L
7.6		23.2	46.0	K
9.2	26	13.0	10.8	K
9.4		22.3	30.9	
8.2		48.4	2.4	K
8.9		58.6	45.2	
9.4	27	3.0	24.9	
7.8		18.9	31.8	K
6.1	28	5.6	58.2	K
9.5		29.0	6.9	
9.4	29	12.8	21.2	
7.3		57.2	12.8	K
9.4	30	4.7	15.6	
9.5		28.8	2.6	
9.4		35.2	20.0	
9.5		56.2	14.9	B
9.0	31	23.7	40.6	B
8.2	32	13.0	47.1	K
8.9		22.8	34.8	K
9.5		36.2	59.0	
9.4		49.4	54.0	
9.5		56.2	45.2	
9.5	33	1.7	53.7	
6.9		21.9	19.1	K
9.5	34	30.0	50.7	
9.5	35	14.9	56.4	
9.0		46.7	25.2	K
9.3		46.7	24.2	B
8.7	36	6.8	51.1	K
9.5		8.6	32.2	
9.3		13.0	48.2	
9.5		51.0	33.0	
9.5	37	35.7	56.0	
9.4		54.5	44.1	
7.9	38	23.1	47.1	B
7.9	39	4.7	27.3	K
8.4		17.3	23.4	K
8.3		34.0	35.0	K
7.2		59.8	31.2	K
8.5	40	59.7	25.5	
9.1	41	3.3	21.2	
9.2		10.4	50.2	
9.5		13.7	58.0	
9.4		48.4	5.3	
9.5	42	21.8	8.2	
9.5	43	41.4	50.9	
9.1	44	9.3	48.7	B
9.0		47.8	56.9	
9.0		55.8	25.6	K
9.3	45	2.5	26.0	
9.1		9.4	9.9	

461—520

	2ª—3ª		+30°	
m	′	″	′	
9.4	45	27.8	52.1	
9.5	46	8.3	34.2	B
9.0		41.0	50.7	K
7.0		58.1	27.0	K
7.9	47	8.5	59.5	K
8.0		48.2	17.6	K
9.5	48	38.8	13.6	
9.5	49	14.6	21.3	
7.8		16.8	54.3	L
9.5		19.0	27.4	
9.0		44.2	46.5	K
9.4	50	49.5	34.9	
9.5		59.3	52.4	
8.3	51	11.2	0.7	K
9.4		22.8	50.4	
9.5		28.1	18.4	
7.5		31.7	32.1	K
9.1	52	6.4	10.2	
8.8	53	24.8	25.2	
9.5	54	2.0	37.6	B
9.4		17.8	23.2	
8.7	55	49.4	43.8	K
9.4	56	0.1	19.4	
8.5		7.1	29.3	K
9.4		11.8	20.8	
8.4		49.8	15.0	L
9.4	57	2.4	38.7	
9.5		24.1	15.3	
9.5		31.1	18.0	
9.5		48.2	43.1	
9.4		55.9	10.6	
9.1	58	1.0	5.1	
9.0	0	42.2	46.9	
8.8		59.7	50.3	
9.5	1	9.0	39.3	
9.5		49.8	54.1	
9.5	2	13.7	48.2	
9.4		18.7	22.2	
9.3		36.3	49.0	
9.5		51.9	41.5	
9.4	3	10.2	26.8	B
9.0		21.3	52.4	
8.7	4	6.8	18.7	L
9.4		9.2	30.6	B
7.2		21.0	31.8	K
9.3		21.2	13.3	
8.9	5	2.3	31.5	
9.5		15.1	5.8	
9.5		43.1	33.0	B
9.2		59.7	5.0	
8.5	6	7.8	12.8	K
5.8		31.6	1.0	K
9.5		42.2	27.7	
9.5	7	26.7	46.9	
9.2		35.1	19.1	
9.2	8	3.4	30.0	K
9.3		27.2	49.7	B
8.9		32.7	18.7	L
9.4		35.3	49.5	B
6.5		51.0	35.5	K

521—580

	3ª		+30°	
m	′	″	′	
9.4	9	16.8	9.1	
9.0		20.5	16.7	L
9.5		25.8	53.7	
8.2		32.5	29.4	L
8.8	11	16.7	32.8	K
8.8		40.7	17.7	L
9.5		59.5	2.9	
9.5	12	1.5	54.4	
9.4		15.2	36.6	B
8.3		27.7	13.9	L
9.4	13	9.8	19.7	
7.5		23.9	53.4	K
9.5		32.3	11.5	
9.5		58.8	42.5	
7.5	14	31.2	28.3	L
9.4		39.5	0.4	
9.3	15	4.2	56.1	
8.5		44.7	53.3	K
9.1	16	53.2	13.5	B
8.8		56.8	25.2	K
9.5	18	2.7	5.6	
9.4		36.4	12.1	
9.4		42.8	43.5	
8.8		46.7	53.8	K
9.4	19	40.3	15.7	
9.4		59.2	5.8	
9.3	20	1.3	43.8	
neb		23.8	53.1	
9.5		28.0	55.4	
9.4	21	21.8	36.6	
9.3	22	47.7	10.5	
8.3	23	32.5	57.5	K
8.8	26	32.7	43.5	K
9.2	27	15.0	5.4	
9.4		28.9	5.9	
8.3		38.2	35.5	L
7.9	28	8.8	39.0	K
7.1		32.2	38.6	K
9.5	29	15.7	22.0	
9.2		53.6	53.8	
9.2	31	5.3	50.5	
9.4		32.0	52.4	
9.3	32	9.7	59.1	
9.3	33	16.3	40.7	
9.5	34	54.5	28.0	
9.4	35	40.8	27.3	
9.3	36	3.3	26.3	
9.0		5.2	38.4	
9.4		48.3	32.0	
9.5	37	4.8	27.3	
9.4		13.6	3.7	
9.3		36.7	25.9	
9.1		47.8	21.5	
9.5	38	20.0	6.0	
9.4	39	11.5	39.9	B
8.7		36.0	12.3	K
8.8	40	11.2	39.7	K
9.5		56.7	34.9	
9.0	41	52.3	13.2	
9.3	42	26.9	59.6	

581—640

	3ª—4ª		+30°	
m	′	″	′	
9.4	42	41.8	48.1	
6.5	43	2.2	44.1	K
9.5		12.7	4.6	
9.2		14.8	40.3	
9.4	44	13.9	4.6	
8.9		34.4	19.9	K
9.1		48.0	46.0	
9.5	45	13.7	12.7	
9.0		17.0	33.0	
9.5		30.3	39.9	
6.5	46	19.8	37.7	K
9.2		39.9	14.7	K
9.5	47	8.4	16.1	
9.5	49	22.1	12.3	B
9.0		28.6	59.4	K
9.5		43.4	49.4	
9.3		43.7	56.4	
9.3	50	34.9	21.9	
8.6		39.6	56.2	K
8.8		43.2	56.4	K
9.3		46.8	22.5	
9.2		46.8	26.7	
8.9		54.7	1.3	
9.4	51	34.4	24.4	
9.5		39.9	41.9	
9.2	52	45.1	34.0	
9.0	53	1.8	27.1	L
9.4		11.9	18.9	
8.2		19.3	56.9	L
9.3		50.6	10.2	
9.0	54	30.3	18.5	K
9.3		47.1	33.3	
9.4	55	27.4	39.1	
8.9		33.9	30.5	
9.3	58	9.4	37.4	
9.5		14.5	6.8	
9.5		29.1	48.2	
9.0		38.6	25.2	K
9.2	59	8.4	27.1	K
9.3		28.7	38.7	B
8.3		57.1	30.8	K
9.5	0	7.0	41.1	
8.8		12.1	24.0	
8.5		12.8	15.4	K
9.5	1	8.0	46.2	
8.6		12.4	15.4	K
9.4		23.9	22.6	
9.4	2	20.3	59.8	
9.5		58.1	7.4	
9.0	3	8.0	2.7	
9.5		18.2	39.4	
9.3	4	11.6	47.6	
9.4		22.9	47.0	
9.5	5	1.3	58.0	
9.0		29.3	35.4	K
8.7		52.5	28.4	K
9.5	6	16.9	40.8	
9.5		50.8	33.9	
9.5		51.9	39.4	
9.5	7	11.1	23.0	

641—700

	4ª		+30°	
m	′	″	′	
9.2	7	50.4	26.4	
9.5	8	6.3	11.7	
9.5		21.7	10.1	
9.5		26.9	45.3	
9.1		57.8	53.1	
9.2	9	5.9	34.2	
9.5		8.0	39.9	
9.4		33.8	41.6	
9.2	10	0.9	5.7	
9.4		18.3	11.6	
7.8		21.0	31.8	K
9.5		46.9	14.7	
8.7		55.5	47.5	L
8.3	11	0.5	33.6	K
9.3		12.3	45.5	B
9.3		19.4	24.3	
8.2		41.8	53.7	K
8.5		58.2	36.0	K
8.8	13	10.9	5.1	
9.0	15	22.6	5.9	
9.4		54.7	53.6	
9.2	16	0.3	5.6	
9.4		42.5	2.1	
9.4	17	29.4	15.7	
6.0	19	44.4	3.0	K
9.4	20	8.8	47.2	
9.4		40.7	1.8	
9.0		58.3	12.8	B
9.4	21	5.9	23.8	
9.4		18.0	3.9	B
9.1		33.7	21.1	K
9.3		53.5	7.9	
9.5	22	9.2	48.5	
8.9		10.5	57.7	K
9.5		21.8	20.3	
9.5		24.1	8.7	B
9.3		57.1	54.2	
9.5	23	1.4	12.0	B
9.3		17.2	12.0	B
9.5		19.2	3.5	
9.5		57.4	25.2	
9.5	24	26.3	53.5	
9.3		32.0	52.0	
9.3		35.3	36.3	B
8.3		47.2	53.8	L
8.9	25	38.2	20.0	K
9.1		50.7	19.4	K
9.3		52.8	48.6	
9.4	26	5.6	29.0	
9.5		31.3	27.0	
8.8	27	15.1	36.3	K
9.3		27.4	13.5	
9.4		30.7	54.2	
9.2		50.5	29.2	B
7.7	28	4.8	6.3	K
9.5		23.9	1.7	
8.8		32.5	58.1	K
8.4		36.3	6.0	K
8.7		42.5	13.5	K
9.1		45.8	46.5	

701—760				761—820				821—880				881—940				941—1000			
	4ᵘ	+30°			4ᵘ—5ᵘ	+30°			5ᵘ	+30°			5ᵘ	+30°			5ᵘ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	29 16.7	23.1		9.0	52 33.7	56.6		9.5	3 25.1	25.3		9.4	15 56.9	49.5		9.0	25 31.7	53.3	K
9.4	39.8	9.4		9.4	46.8	57.7		9.0	31.5	50.0		8.5	16 1.8	1.7	K	8.0	46.2	49.1	L
9.4	31 1.3	16.0		9.5	53 11.5	26.6		9.2	39.3	43.0		9.5	10.7	37.6		9.5	49.5	7.5	
7.2	36.0	0.8	K	9.4	26.6	41.5		9.2	41.3	34.3	K	9.2	13.6	39.6	K	8.2	26 4.2	29.9	K
9.5	32 41.1	44.1		9.4	26.7	2.7		8.6	4 6.9	46.6	K	9.0	17.5	33.6	K	9.5	33.6	38.1	
9.5	33 2.3	12.9		9.4	39.4	8.9		9.1	40.1	35.0		8.7	19.9	49.2		9.3	50.0	8.7	
9.5	34 38.6	54.9		9.0	51.3	26.5		7.5	5 0.3	13.7	K	9.0	20.1	32.9	K	9.5	27 1.6	38 6	
9.4	58.8	32.4		9.3	54 21.9	56.0		9.5	18.0	50.9		8.5	27.5	12.7		9.5	1.9	42.3	
9.1	35 0.9	21.6	B	8.5	26.5	25.2		7.9	19.5	30.2	K	9.5	32.6	10.5		8.2	7.0	29.0	L
9.3	7.6	14.4	B	9.4	33.0	30.8		9.5	22.8	23.7		9.4	45 0	5.3		9.3	7.8	41.8	
9.5	58.5	36.6		9.5	56.3	19.4		9.4	28.9	38.2	B	9.0	54.1	6.5		9.2	10.5	16.6	
9.4	36 7.0	12.8		6.5	55 0.8	17.7	K	8.0	37.8	52.9	K	8.5	17 0.2	12.4		9.5	15.8	51.9	
8.5	18.6	0.8	K	9.5	13.4	5.1		9.5	38.2	2.9		9.5	7.1	28.7		9.5	17.2	49.2	
9.4	20.3	41.1	B	8.8	18.7	11.8	K	9.5	44.0	35.0		8.5	29.5	19.8		9.5	22.4	30.7	
9.3	41.3	57.9		8.5	19.2	9.9	K	8.8	50.3	24.1	K	9.5	33.9	27.9		9.5	28.6	22.9	
9.4	37 10.3	49.6	B	9.4	21.3	20.6		9.2	6 5.7	10.1	B	9.2	35.0	29.2		9.1	59.1	18.3	
9.5	15.4	0.1		9.1	24.6	3.5		9.5	11.0	15.3		9.0	37.6	9.7		9.1	28 5.0	33.9	
9.3	23.4	6.2		9.0	34.8	41.4		8.0	37.4	19.3		6.2	51.4	4.2	L	9.2	6.3	55.1	K
9.1	31.8	38.2	B	9.2	56 26.3	28.8	K	9.1	49.7	55.5		9.2	53.2	6.1	B	9.5	10.2	59.1	
9.0	35.2	19.0		9.3	32.6	0.3		9.1	52.0	0.9	K	9.0	59.5	42.5		9.5	41.0	47.5	
8.5	39 45.3	42.0	K	9.0	52.0	5.7		9.1	52.4	29.5		8.8	18 1.9	51.1	K	9.5	51.6	30.4	
9.2	40 6.1	1.9		9.5	57 18.5	25.3		9.5	7 5.5	7.1		8.6	11.4	45.7		8.7	29 11.0	51.6	
9.5	50.0	52.1		9.5	33.4	35.8		9.4	15.4	27.2		9.5	19.7	34.7		6.0	19.6	23.9	K
9.5	52.0	39.0		9.2	58 0.4	54.7		9.0	30.9	13.3		9.5	32.5	53.6		8.9	26.5	7.4	
9.5	53.7	27.2		8.9	8.7	55.6	K	9.3	45.8	20.7		9.2	46.5	13.1		9.5	28.6	32.6	
9.5	41 5.8	56.8		9.0	9.8	35.3		9.1	8 22.5	39.7		8.3	52.4	31.1	K	8.1	57.5	3.5	
8.7	57.2	46.5	K	9.2	10.2	8.5		9.3	22.6	49.1	B	9.3	58.3	55.5		9.2	58.5	57.4	K
9.5	42 22.3	21.8		9.0	13.1	32.7		9.5	31.2	59.5		9.2	19 44.4	56.0	K	7.5	30 4.0	47.9	K
9.5	31.2	9.7		9.3	16.8	39.2		8.8	9 0.5	46.2		9.5	59.5	24.6		9.4	14.1	3.4	
9.5	49.3	23.1		9.0	18.5	25.8		9.1	13.0	6.0		9.4	20 12.0	37.5		8.2	39.8	0.0	B
9.5	52.5	17.6		9.5	25.6	5.0		8.7	14.1	14.3		9.1	15.9	37.8	K	9.2	46.6	8.9	
6.8	54.6	54.7	K	9.5	28.3	12.5		9.1	39.9	12.8		8.5	27.2	28.4		9.5	57.2	27.7	
9.4	43 24.3	9.5		9.5	31.7	28.0		9.3	52.5	17.7		8.7	48.6	19.8		9.5	31 10.4	26.5	
9.2	24.8	46.9		8.5	59 0.0	59.1	K	8.8	10 2.4	50.8	K	9.4	48.8	28.0		9.5	18.1	14.2	
9.0	45.5	34.8		9.4	3.8	50.4		9.5	4.0	11.4		9.4	58.2	48.5		9.5	35.0	34.3	
9.5	55.1	2.2		8.8	11.6	14.8	K	9.4	7.2	15.9		9.5	21 7.3	2.8		9.5	32 38.8	56.7	
9.5	44 39.7	1.0		9.5	48.4	17.0		9.1	9.1	10.2	B	8.6	26.6	55.2	K	9.4	39.7	22.6	
9.4	45 52.2	6.3		9.3	49.0	6.1		9.5	38.4	29.0		9.3	55.6	3.9		9.5	41.8	32.6	
9.2	54.8	57.8		9.1	0 11.0	21.8	B	9.4	42.1	47.3		9.5	22 0.6	41.0		9.1	45.0	13.0	
9.5	46 24.5	55.4		9.3	31.3	30.4	B	9.0	42.8	20.8	K	9.5	6.3	35.1		9.5	33 0.3	59.6	
6.8	31.3	19.3	K	9.5	35.0	6.2		9.5	11 11.5	54.9		9.5	9.4	55.5		9.4	1.7	32.2	B
7.0	35.4	6.7	K	9.5	46.0	5.9		8.8	29.7	53.4	K	9.0	24.0	59.8		9.4	4.8	1.5	
8.8	44.9	19.7	K	7.8	57.7	23.4	B	9.2	38.8	4.5		8.9	33.2	48.4	K	9.5	21.0	40.9	
9.0	47 45.8	51.8		7.0	1 18.9	36.3		9.5	53.6	30.1		9.5	46.9	30.2		9.5	29.9	28.9	
9.4	51.5	44.3		9.5	25.3	57.0		9.4	12 12.4	47.0		9.3	23 4.1	50.2		9.5	39.7	58.6	
8.1	48 53.4	24.5	K	9.5	30.4	2.5		9.5	18.0	25.7		9.5	20.7	49.0		8.2	41.6	49.2	K
9.1	49 4.6	3.3	B	9.3	47.4	1.9	B	9.4	13 47.1	5.3		9.4	48.0	59.7		9.0	34 2.6	40.3	
9.0	19.4	28.2	K	8.6	49.9	6.5	R	9.5	54.7	21.0		9.3	49.7	49.4		9.4	3.4	17.1	
9.4	31.8	25.6		9.5	2 2.8	23.6		9.3	14 10.2	3.6		9.5	24 15.6	40.5		9.5	17.0	32.6	
9.3	58.5	41.4		9.4	3.1	53.9		9.4	28.3	13.5		9.5	20.1	37.8		9.4	26.8	43.7	
8.5	50 4.7	46.5	K	9.5	5.6	0.6		8.9	34.3	5.6		9.5	27.1	11.6		9.5	32.9	39.0	
8.0	6.5	49.9	K	7.0	11.5	37.7	R	9.2	38.4	53.7		9.1	27.7	25.7	K	8.1	43.6	51.3	S
9.5	16.5	24.0		9.5	28.5	20.5		8.9	15 11.1	3.2	K	9.5	32.9	3.7		7.5	35 11.1	24.7	K
9.5	31.3	25.3		9.5	32.0	26.4		9.5	13.0	41.7		9.5	35.6	24.5		7.9	24.0	33.1	K
9.5	49.0	18.5		9.1	33.4	9.1		9.5	15.6	56.7	B	9.3	36.4	17.8		9.5	39.9	58.4	
9.5	51 38.9	48.2		9.5	3 1.9	23.8		8.5	16.6	26.9		9.5	37.3	53.9		9.5	49.3	21.5	
9.5	55.3	58.4		9.5	4.4	35.6		9.4	18.8	50.5		9.3	25 0.7	17.3		8.5	36 17.6	5.8	L
9.4	52 9.2	19.0		8.7	11.5	3.0	K	9.5	37.2	1.8		8.7	13.9	30.1		9.3	18.3	3.2	
9.5	30.7	53.0		9.1	15.4	4.9	K	9.5	46.6	38.5		9.5	17.9	25.4		9.0	23.7	42.5	K
9.5	32.2	9.6		9.0	19.8	15.3	K	9.5	49.3	32.4		9.3	19.1	55.3	K	9.1	28.8	45.2	K

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	5ᵐ		+30°		5ᵐ		+30°		5ᵐ—6ᵐ		+30°		6ᵐ		+30°		6ᵐ		+30°	
m	′	″	′		′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	37	1.8	33.0		46	59.8	20.6	8.3	58	57.9	15.9	L	9.4	8	19.0	54.6	B	9.2	19	51.5	6.9	
9.2		8.4	42.5	K	47	35.7	59.5	8.0	59	9.8	35.1	K	9.4		27.3	22.5		9.4	20	0.5	1.3	
9.4		10.2	50.9			40.6	34.4	9.4		23.7	2.6		9.3		38.0	49.9		9.5		3.3	50.6	
9.2		16.5	31.1			52.5	46.5	9.5		28.8	48.4		9.2		44.3	42.0	K	9.5		38.1	5.2	
9.4		30.6	16.3		48	18.7	29.4	9.1		35.3	15.1		8.7	9	5.3	18.8		8.4		58.3	32.4	R
9.5		44.0	13.1			30.0	35.6	8.5		48.3	32.2	K	9.3		6.7	14.6		9.5	21	11.5	54.6	
9.1		48.6	35.3			32.9	25.5	8.8		55.5	2.6		9.5		18.3	51.4		8.9		20.0	48.4	
9.5		50.0	56.5			53.5	57.8	B	9.5	0	2.3	5.2	9.2		49.5	17.4	B	9.4		43.3	24.7	
9.3	38	5.9	40.4		49	0.4	23.2		9.1		3.3	17.8	9.5		57.3	2.8		9.4		43.8	22.5	
9.5		7.5	14.7			1.6	29.6		9.5		9.7	0.1	9.5	10	12.8	56.6		9.3	22	9.0	49.7	
9.4		7.6	20.9		8.7		16.4	11.1	K	9.5		33.4	52.4		9.2		17.3	6.2		9.2		23.1	13.2	
9.4		22.2	2.5		9.5		38.6	46.7		8.5		53.5	3.0		9.4		22.2	14.8		9.4		34.3	57.7	
9.1		41.6	11.9	K	9.5		39.0	3.4		7.8		53.8	34.4	L	9.5		22.5	21.2		8.8		35.3	34.7	
8.5		47.8	34.1		9.1		56.4	57.4		8.0		57.3	27.4	L	9.5		29.2	54.8	B	9.3	23	0.3	41.4	
7.3		51.3	28.4	K	9.5	50	33.8	15.0		9.5	1	0.2	40.7		9.5		51.1	14.5		9.5		7.4	37.9	
9.5		52.4	45.2		9.1		36.6	10.7		8.2		7.0	20.0	L	7.8		56.3	25.6	K	8.0		46.3	25.3	L
9.0	39	10.0	1.0		9.1		40.6	54.7		9.5		10.5	25.2		9.5	11	7.2	47.4		9.2		55.5	27.5	
9.5		16.6	38.5		9.4	51	19.7	4.3		8.1		17.3	59.0	K	9.3		10.3	55.0		9.1		57.7	11.2	
9.5		35.9	23.9		9.5		28.0	44.1		9.5		28.0	23.9		9.5		10.8	39.5		9.5	24	20.2	2.7	
8.5		38.6	39.0	K	9.5		32.3	52.5		9.5		45.0	52.2		9.4		25.8	9.2		9.1		21.1	55.6	
8.7		55.7	2.5		8.9		49.2	49.6	K	8.0		59.3	42.1	K	9.3		29.3	21.5		9.2		32.0	21.8	
9.4	40	20.0	5.9		9.2		53.9	34.3		8.3	2	0.3	43.3	K	9.5		42.6	18.6	B	9.4		49.5	4.3	
9.0		38.7	19.5		9.5		55.2	22.1		9.4		4.3	8.5		9.5		44.2	14.8		9.5	25	9.3	5.8	
8.7		39.9	30.2		9.0		57.0	30.0		9.3		24.0	6.0		9.4		52.9	24.0		9.1		27.6	4.6	
9.4		46.1	57.8		9.5	52	1.9	0.8		9.4		29.2	44.0		9.4		55.3	7.2		9.0		32.0	22.2	
9.5		55.5	13.1		9.2		32.6	13.0		9.5		38.8	52.2		9.5	12	5.3	36.1		9.3		35.7	32.3	
9.0	41	32.6	40.0	K	9.2		39.9	7.8		9.3		55.4	17.7		9.5		7.2	7.2		9.3		55.9	20.2	
9.5		33.8	52.5		9.5		43.4	16.2		9.5		56.3	23.6		9.3		14.0	15.3		9.4		56.7	49.6	
9.3	42	10.2	24.4		9.3	53	9.0	55.0	B	8.8	3	9.3	21.0		8.1		21.3	27.0		9.3	26	9.3	16.0	
9.0		10.5	33.9		9.1		23.3	7.8		8.3		11.3	33.3		9.2		41.8	54.0		8.7		17.3	31.3	K
9.3		11.6	34.6		9.0		32.6	20.6		7.7		14.7	48.6	K	7.0		46.5	1.6	K	9.4		21.4	45.6	
8.8		12.1	29.4		9.5		40.1	53.5		9.5		38.8	59.5		9.5		50.0	30.0		9.3		37.3	5.1	
7.4		21.9	54.8	K	9.3		42.3	30.2		9.3		56.3	43.0		8.8	13	12.8	34.4	R	9.0		45.3	44.0	
8.2		22.8	41.7	K	9.1	54	21.1	32.4		9.4	4	34.7	54.6		9.2		17.8	14.7	B	9.5	27	5.0	20.0	
9.5		35.6	37.5		9.1		31.8	29.9		9.3		50.3	48.2		9.3		43.5	27.5		8.4		5.8	12.8	K
9.4	43	0.8	0.3		9.5	55	13.7	30.1		9.4		51.5	16.8		8.8	14	7.3	5.0	R	9.0		36.5	46.6	
9.5		13.1	26.6		9.2		14.2	14.3		9.5		59.6	3.0		9.5		31.7	21.3		9.2		40.0	23.6	
9.4		19.6	35.5		8.2		15.7	14.1	B	9.5	5	5.2	50.8		8.2		54.3	31.9	K	8.9	28	18.0	1.7	
9.3		36.7	38.5		9.4		18.5	36.5		8.8		7.5	49.2		8.6	15	31.3	6.9		9.4		33.7	2.4	
9.5		48.5	40.0		9.1		34.1	57.2		9.3		22.2	50.9		8.7		38.3	39.8	R	9.3		36.4	59.1	
8.0	44	1.1	24.4	K	9.5		40.9	55.8		8.6		27.0	59.3	K	9.5		59.4	27.4		8.8		57.8	44.7	
9.3		24.5	16.5		8.6		50.6	15.8		9.3		34.2	34.8		9.5	16	35.0	1.5		9.5	29	3.0	15.1	
9.4		24.6	4.1		9.1		54.3	46.4		9.3		38.2	55.3	B	9.5		39.3	34.4		9.4		13.2	47.0	
9.2		32.7	37.0		9.3	56	20.8	45.0		9.5		51.9	16.8		8.5		40.4	22.8	R	9.0		13.3	54.1	
7.8		56.8	26.9	K	9.3		25.0	53.4		9.2	6	17.4	4.5	B	9.2	17	6.2	1.5		9.5		23.5	29.4	
9.0		57.6	36.1		9.1		29.8	13.0		9.5		18.0	0.7		9.3		7.4	3.2	B	9.5		33.0	39.2	
9.4	45	1.0	51.7		9.2		36.3	36.1		8.5		29.3	49.7		9.5		13.2	44.5		9.2		37.1	56.5	
9.5		9.3	20.3		9.0		55.3	4.3		8.7		37.8	33.4		9.5		26.9	27.4		9.1		51.3	8.0	
9.5		12.1	25.2		9.1		58.5	52.2	K	9.1		47.3	1.0		9.5		28.4	20.2		9.5	30	5.7	51.8	
8.9		34.5	18.0	K	8.4		58.6	47.2	K	9.5		58.0	34.8		9.4		47.5	0.2		8.0		16.1	25.5	L
9.0		42.7	45.9	K	9.4	57	42.1	13.6		9.2	7	1.3	7.4		9.3	18	7.3	21.3		9.5		35.5	2.7	
9.5		51.8	54.5		9.2		54.3	59.6		7.0		3.3	8.6	S	7.1		20.3	43.6	B	9.5		47.3	10.0	
9.5		53.6	15.0		9.4	58	8.2	12.7		9.2		12.1	49.8		9.3		42.0	22.6	R	9.5		50.4	31.5	
9.5	46	8.1	45.0		9.5		22.1	25.5		9.2		27.5	47.6		9.5		45.5	11.9		9.5		55.4	21.0	B
8.3		15.9	40.5	K	9.1		22.8	41.9	K	9.1		27.8	51.3		8.5		51.8	29.9	R	9.2		56.7	45.0	
9.5		17.7	36.3		9.4		31.3	7.6		9.2		35.0	46.9		9.3		54.7	37.1		9.3		57.8	4.5	
9.5		32.6	43.0		9.3		47.5	32.4		8.0		36.8	2.8	B	9.3		55.7	8.4	B	8.2		58.3	17.6	K
9.5		35.2	50.8		9.5		52.7	1.5		8.8		55.9	59.9		6.0	19	15.0	34.9	K	9.4	31	30.0	50.5	B
9.0		37.9	26.0		9.5		54.6	33.6		9.5		57.5	48.4		9.5		17.8	15.9		9.5		30.7	52.0	
9.5		58.0	35.9		8.6		57.1	35.6	K	9.5	8	11.1	3.8		8.5		25.3	22.4	R	8.0		35.3	20.0	K

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ᵘ	+30°			6ᵘ	+30°			6ᵘ—7ᵘ	+30°			7ᵘ	+30°			7ᵘ	+30°	
m				m				m				m				m			
9.5	32 27.5	14.3		8.6	46 38.1	52.6	K	9.1	58 47.2	37.5		9.5	10 40.7	4.9		8.7	30 51.2	13.6	
9.2	28.9	7.9	K	9.1	40.2	14.6		9.5	51.5	55.3		9.5	46.3	18.4		8.9	31 4.3	15.8	
8.0	29.3	48.7	K	9.0	49.0	42.3		8.6	52.5	4.1	L	9.1	11 21.4	39.3	B	9.0	12.7	27.3	
9.4	33 21.9	59.0		8.9	50.3	44.5	B	9.3	59 4.1	29.6		9.2	22.4	30.3	K	9.1	26.5	23.2	
8.2	33.3	31.4		9.4	47 18.4	1.6		9.3	12.5	51.7		9.3	30.0	44.2		9.5	28.1	51.5	
8.6	39.8	7.4		9.4	39.8	29.8		9.4	18.2	42.8		9.1	12 7.1	54.9		8.8	32 8.5	53.6	K
8.8	49.5	29.8		9.3	40.6	33.4		9.1	37.2	14.0	B	9.1	35.7	5.6		9.5	33.7	4.2	
9.5	55.4	28.3		8.3	46.8	13.3	K	9.5	51.2	10.5		8.3	53.8	6.1		9.5	33 8.6	43.2	
9.4	34 20.3	5.9		8.1	48 1.9	47.2	K	9.3	51.5	6.1		8.1	57.4	33.2	K	7.0	11.1	30.5	K
9.3	25.7	47.1		9.5	9.2	23.5		7.8	55.2	35.9	K	7.6	13 24.0	5.5	K	8.8	19.0	54.3	
9.0	26.9	54.8	K	8.9	9.8	33.3	B	7.5	0 5.7	22.6	K	9.3	28.7	39.6	B	8.9	23.6	50.1	
8.9	45.6	58.8	K	9.2	12.7	31.1		9.1	10.3	13.8	B	9.4	59.0	6.8		9.5	41.3	41.6	
8.6	35 3.7	39.0		8.5	16.3	56.9	B	9.3	14.9	50.4		9.3	14 50.7	30.3		8.9	47.5	9.8	
8.2	16.8	37.3	K	9.1	17.9	39.0		9.5	15.3	11.4		9.1	15 11.4	57.7	K	9.3	48.4	59.4	
9.5	35.5	0.3		9.0	19.9	41.4	K	8.8	52.8	14.1	B	9.3	33.0	28.5		9.3	34 10.1	28.6	
9.0	45.3	14.1		9.4	24.0	48.8	B	8.1	1 10.1	35.4	K	9.5	16 16.2	27.7	B	9.2	11.5	43.3	
9.5	45.4	0.1		9.5	49 2.5	14.4		8.9	38.8	4.8		9.5	39.3	33.4		8.7	14.8	37.9	
7.0	50.3	58.6	K	9.4	6.0	22.3		9.3	49.8	43.5		9.5	40.1	27.1		9.5	41.6	24.9	
8.9	52.0	45.8		9.1	21.1	29.5	B	4.7	54.8	29.4	K	9.5	45.8	24.6		9.5	35 10.9	0.3	
8.9	36 14.8	20.0		9.3	22.1	25.5		9.4	2 4.5	9.9		9.0	17 3.4	2.7	K	9.3	46.7	6.7	
9.2	31.0	2.0		9.5	26.8	53.2		9.4	6.1	54.9		8.8	9.0	15.2		9.1	36 1.5	34.8	
9.0	31.8	35.1		9.4	33.3	2.1		7.8	14.0	42.2	B	8.6	11.7	46.3		9.5	17.6	35.6	
9.3	34.3	38.8		9.4	50 5.1	54.1		9.2	16.5	38.4		9.5	23.6	54.9		9.1	31.7	28.0	
9.3	37 27.0	7.7		9.5	13.6	53.5		8.7	17.1	49.1	K	9.5	18 2.4	57.6		9.2	37 24.0	30.4	
9.0	37.5	59.5		9.1	18.9	27.1	B	9.3	39.8	32.8		8.9	14.5	9.1		9.4	30.1	50.8	
9.5	38.1	51.9		9.5	31.3	7.4		8.7	3 2.7	38.3	K	9.5	32.8	14.2		8.1	38 18.2	26.8	K
9.5	48.7	46.5		7.5	54.4	28.8	B	9.5	6.5	31.6		9.5	39.9	53.5		9.3	21.5	46.5	
9.5	49.8	1.0		9.4	51 10.6	18.6		9.3	43.7	54.1		8.7	52.9	36.1		9.1	32.1	13.5	
9.5	50.0	25.2		9.0	40.2	15.7		9.1	51.6	48.0		9.5	59.1	51.9		9.4	39.6	37.0	B
9.5	38 8.6	22.2		9.4	42.3	36.0		9.3	52.7	34.1		9.4	19 35.5	49.3		9.5	53.2	4.3	
8.2	12.3	46.2	B	9.0	42.5	18.8		9.1	4 2.1	55.2		9.5	48.1	37.0		9.4	39 39.5	24.2	
7.8	29.3	15.5	K	9.3	44.7	55.0		9.5	28.3	4.9	B	9.5	20 4.5	53.4		9.4	55.2	30.4	B
9.4	37.2	9.1		8.2	46.8	8.8	K	9.5	33.9	1.9		9.5	15.7	52.4		9.5	40 27.4	12.8	
9.5	39 22.5	44.0		9.4	49.2	58.5		9.4	44.8	10.9		9.5	21.0	55.4	B	8.3	50.7	17.6	B
9.5	24.2	9.1	B	9.4	52 6.5	9.5	B	9.5	50.1	21.5		9.2	38.3	3.0		9.5	53.6	53.7	
8.7	50.9	17.1	K	9.5	31.6	30.4		9.5	5 6.1	19.7		9.5	21 16.2	2.2		9.0	41 26.5	59.8	
9.4	59.0	57.4		9.5	39.2	50.0		9.1	15.6	41.8		9.3	28.3	20.8		9.5	28.4	6.0	
9.5	40 12.3	26.4		8.8	42.9	40.1	B	9.5	15.6	9.3		9.1	30.4	7.5	B	9.2	32.8	31.0	
9.1	16.4	32.5		9.3	44.0	38.6		9.3	26.5	8.3		8.4	44.8	52.2	K	9.0	34.8	1.8	B
9.2	41 17.0	52.8		9.4	45.2	48.0		9.5	30.5	7.2		8.5	51.2	52.2	K	9.5	49.6	21.1	
9.4	25.4	29.5	B	9.0	50 1	25.5	B	9.0	35.2	13.4		9.5	22 35.1	20.2		7.6	53.9	37.4	B
9.5	32.9	29.9		9.3	58.3	40.2	B	9.1	42.5	6.3		9.1	23 14.0	16.9		9.5	55.9	0.5	
9.3	46.2	13.8		9.3	53 2.8	31.6		8.8	49.6	36.2		9.5	19.0	58.8		8.0	42 21.9	53.6	B
9.3	51.2	24.3	B	8.7	13.6	4.5	K	8.7	50.8	6.0	K	9.5	22.5	16.3		9.5	41.4	42.1	
7.9	42 1.7	0.6	L	9.4	25.1	30.0		9.1	7 2.0	36.3		7.5	24 20.9	55.5	L	9.1	42.6	36.0	K
9.3	30.5	14.3		8.5	54 26.2	41.3	K	8.7	9.7	57.5	K	9.3	45.0	31.9	B	9.5	42.7	49.7	
9.3	51.8	32.2	B	8.8	27.3	10.7	K	9.0	14.8	40.5		9.0	55.7	41.1	K	9.3	43 5.7	10.0	
9.3	52.5	44.3		9.4	30.6	12.3		8.9	21.5	9.5		9.4	25 43.9	8.8		9.5	10.6	13.9	
9.4	43 1.0	49.7		9.0	33.0	18.5		9.1	49.6	12.2		9.5	26 8.1	59.2		8.1	25.4	17.9	K
9.4	8.8	32.5		9.2	48.7	54.2		9.4	57.5	3.4		8.5	15.0	32.8	K	8.7	41.0	5.4	K
9.5	11.0	25.0		9.4	59.2	10.1	B	9.5	59.5	7.8		9.5	37.5	4.8		8.8	45.0	32.0	
8.8	38.2	24.1		8.9	55 34.0	28.4		9.5	8 27.8	2.4		9.5	27 21.0	14.4		9.2	56.8	44.9	
9.5	45.5	32.0		7.3	43.5	34.5	K	8.7	33.1	37.8	K	8.4	32.9	5.8		9.5	44 24.7	51.0	
8.3	44 10.5	38.5	K	9.1	56 15.9	4.3		8.7	39.6	44.1	K	9.2	50.2	0.0		9.2	27.0	22.2	
9.4	13.5	56.1		9.2	28.0	51.3	B	9.2	49.0	40.1		8.5	57.3	19.3		9.4	28.6	3.2	
9.5	45 26.5	43.2		9.1	53.4	22.7		9.5	9 25.8	25.5		9.1	28 9.1	10.4		9.1	31.6	40.1	
7.8	31.7	0.2	K	9.5	57 5.3	56.3		9.4	10 7.8	18.3	B	9.4	29 2.1	39.7	B	9.4	34.8	48.0	B
9.5	46 6.5	25.0		9.5	46.5	58.3		9.4	24.8	53.7	B	9.3	12.4	54.4		9.3	45 13.9	2.3	
8.1	10.5	20.7	K	9.3	58.8	44.5		9.5	30.0	45.2		9.5	30 2.8	29.6	B	9.3	19.1	51.3	
9.5	33.6	5.4		9.4	58 12.4	17.2		9.5	30.5	50.7		9.1	41.8	17.7		9.4	19.8	43.4	B

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	7ᵘ—8ᵘ	+30°			8ᵘ	+30°			8ᵘ	+30°			8ᵘ—9ᵘ	+30°			9ᵘ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.5	45 39.4	44.5	L	8.4	3 53.2	52.4	K	9.1	23 42.8	52.2		7.0	43 20.7	23.4	K	9.4	8 53.3	54.7	
9.3	46.4	56.6	B	9.5	4 2.0	4.1		9.5	24 9.4	4.1		9.5	38.8	3.5		9.0	9 31.1	10.3	
9.4	56.0	39.4	B	9.2	10.6	14.3		9.3	20.3	12.6	B	9.5	44 7.9	3.8		9.5	32.7	41.9	
9.5	46 2.6	39.7	B	5.6	11.0	6.7	K	9.5	27.0	22.5		7.7	11.2	29.9	L	9.5	35.8	28.8	
9.3	7.5	16.7		9.2	17.5	0.6	B	9.2	40.7	31.3		9.5	20.0	39.9		8.3	59.1	20.9	B
9.5	12.5	39.2	B	8.9	28.0	38.9	K	9.0	55.8	48.5		9.2	44.8	49.5		9.5	10 9.3	39.5	
9.4	18.9	38.4		9.5	36.3	34.4		9.4	25 15.9	56.7		9.5	45 10.3	42.9		8.3	12.0	26.8	K
8.5	24.0	56.8	B	9.5	36.9	51.1		9.5	26 16.7	15.5		8.8	17.9	56.1		9.5	30.7	56.0	
8.5	36.0	13.8	B	9.3	37.6	17.5		9.5	56.6	54.6		8.6	24.2	40.2	K	9.4	52.1	37.4	
8.4	36.4	45.5		9.5	56.2	50.1		9.5	27 0.3	4.8		9.0	28.7	20.5	B	9.3	11 15.8	10.3	
9.3	48.5	2.4		9.5	59.1	0.8		8.5	5.2	31.5	K	9.3	29.0	7.5		9.4	49.1	20.2	
7.0	47 11.0	13.8	B	9.3	5 10.6	49.6	B	9.5	13.3	20.9		8.2	33.7	46.4	K	9.1	12 48.3	29.9	
9.5	17.5	44.1		9.3	16.0	25.5		9.5	40.2	35.7		9.5	46 19.1	41.5		9.5	13 8.1	16.8	
9.5	23.5	53.0		9.3	17.3	43.7		8.9	28 7.4	16.5	K	9.4	33.0	57.7		9.5	43.3	8.5	
9.4	46.4	13.0		8.7	6 11.6	55.6	K	9.4	15.2	3.8		6.5	49 9.5	47.8	K	8.7	14 20.5	48.7	B
9.5	48 5.0	48.3		8.5	48.0	21.1		9.5	30.2	8.3		9.5	31.3	0.3		9.5	26.9	32.5	
9.5	15.8	21.7		8.5	59.7	4.6	K	9.5	45.6	38.1		9.4	43.6	56.1		9.4	28.8	44.7	
9.3	41.3	49.2		9.4	7 37.3	9.3		8.3	29 15.7	31.3		9.5	48.7	19.8		9.4	48.9	50.0	
9.5	43.6	4.5		9.5	56.4	22.5		9.0	30.7	8.4	B	9.4	50 49.3	45.7		9.5	15 28.3	40.1	
8.7	49.0	50.9	K	8.1	8 1.0	46.9	K	9.4	40.8	16.8		9.3	51.3	57.0		9.4	28.8	48.8	
9.5	49 4.7	50.1		9.4	17.5	0.8	B	9.5	58.4	12.7		9.1	51 1.4	49.2		9.0	58.4	45.0	
8.9	20.6	48.1		9.4	27.5	33.4		9.5	30 15.2	44.6		9.3	42.7	22.0	B	8.8	16 20.2	45.3	K
8.6	24.4	20.6	R	9.5	47.3	55.0		8.9	35.8	1.8	K	9.5	52.3	47.8		9.4	25.0	24.2	B
9.3	49.6	13.4		9.5	52.4	44.8		9.4	40.7	32.3		9.3	52 4.8	21.6		8.3	29.7	9.5	K
9.3	57.3	40.7		8.8	57.0	10.4		9.1	31 25.2	33.0		8.5	5.6	40.2	L	9.5	17 18.9	7.4	
8.3	50 13.1	50.3	K	9.5	59.0	54.7		9.5	56.3	58.3		9.5	22.7	54.3		9.0	23.8	0.8	B
9.2	41.5	27.3		9.5	59.0	57.6		9.4	32 9.3	19.8		9.5	39.8	39.2		9.5	35.3	5.5	
9.0	44.8	29.1	B	9.5	9 5.0	52.6		9.5	11.2	52.9		7.3	54 21.3	40.8	K	8.5	18 18.9	55.2	
9.2	45.5	14.8		9.0	35.6	46.8		9.5	24.7	56.7		9.4	55 35.8	11.3		8.9	19 10.8	23.3	
9.3	52 2.2	39.0		9.5	37.4	6.9		9.3	45.2	18.3	B	9.4	55.4	59.6		9.4	20 7.2	0.2	
9.0	53 41.2	3.0		9.4	49.3	27.9		8.7	46.7	30.4	B	9.5	56 6.7	23.0		9.3	21 2.5	34.0	
9.4	42.1	54.0		9.5	10 27.4	39.6		9.4	54.0	57.9		9.5	41.4	54.3		9.0	27.8	39.9	
9.3	56.5	15.6		9.5	44.5	54.8		9.5	33 33.9	7.4		8.9	57.2	10.9		8.6	53.3	11.6	
9.5	54 12.1	56.8		9.3	11 36.9	36.2		9.5	50.3	5.5		9.4	57 38.3	53.6		9.4	22 46.4	18.5	B
9.2	50.4	58.3		9.4	12 13.3	12.1		9.5	34 21.8	30.3		9.5	58 27.5	56.5		8.9	23 55.6	12.7	K
9.5	55 41.0	55.5		9.5	50.0	59.9		9.3	35 6.0	15.9		8.8	52.0	10.6		9.2	57.2	32.4	B
9.5	56 10.7	1.0		9.5	13 5.5	39.0		9.5	6.0	49.5		6.0	59 16.3	14.5	K	9.0	26 22.8	51.6	
9.5	11.5	30.5		9.3	5.5	23.4		9.4	18.6	5.5		8.3	28.3	48.8	K	9.5	24.5	5.9	
9.0	27.8	31.3	B	9.4	34.4	48.7	B	9.5	57.8	49.3		8.2	38.1	54.3	K	8.6	27 16.8	5.1	
9.2	57 4.9	11.1	B	9.0	14 0.6	29.3		8.5	36 18.3	10.4	K	9.5	49.4	7.5		9.5	45.7	51.0	
9.5	38.6	38.6		8.8	0.9	59.3		9.4	45.3	5.3		9.1	0 4.3	18.1		9.3	50.1	45.8	
9.5	58 6.9	7.1		8.1	30.1	37.6	K	9.4	37 24.0	5.5		8.2	1 23.4	7.9	K	9.5	53.6	5.2	
9.3	15.0	36.2		9.2	30.5	52.7		9.4	46.5	2.3		8.9	44.0	56.1		8.9	28 10.0	7.8	
9.5	35.5	25.3	B	8.4	15 7.9	11.3	K	9.5	38 0.4	14.8		9.2	2 4.0	41.5	B	9.3	36.4	43.8	
8.5	47.2	51.6	K	9.1	32.8	34.4		9.3	8.4	53.6	B	9.5	9.5	35.0		8.6	30 9.5	30.9	
8.9	59.6	56.0	K	8.5	16 22.7	6.7	K	9.5	47.7	8.7		9.5	10.3	58.4		8.7	15.7	56.1	
9.5	59 13.2	30.3		9.5	35.8	28.2		9.2	39 3.5	21.0		9.5	51.4	49.5		7.5	18.0	48.3	K
9.5	57.9	36.5		9.5	17 20.5	27.3		9.4	11.3	55.9		9.4	3 15.0	40.4		8.7	25.5	56.3	K
9.5	0 1.3	52.0		8.3	18 9.9	2.8	K	9.1	31.7	58.0	K	8.3	37.8	53.7	K	9.5	29.7	29.1	
8.5	5.7	58.5	K	9.5	31.7	48.5		9.5	33.0	50.2		9.5	59.6	4.9	B	9.5	45.6	29.4	
8.3	21.0	47.1	S	9.5	19 24.6	22.0		9.5	43.8	47.5		9.5	4 41.1	41.2		9.5	31 6.1	51.5	
9.5	22.8	14.8		9.2	20 2.2	35.3		9.5	40 4.7	1.9		9.1	51.3	35.0		9.5	23.2	46.3	
9.5	44.3	15.8		9.3	7.1	45.3		9.5	6.5	31.4		9.5	5 26.2	50.5		9.0	45.0	38.9	
9.3	54.6	42.7		9.1	11.7	41.2		9.5	10.7	27.9	B	8.0	41.7	32.9	K	9.5	32 7.1	51.2	
9.5	1 8.7	26.5		9.1	28.8	51.2		9.5	18.3	22.3		9.5	6 52.0	24.7		9.5	33 30.7	43.3	
9.5	36.9	13.8		9.5	31.4	1.3	B	9.4	48.5	26.5		9.5	53.7	17.5		9.4	34.7	0.5	B
9.2	2 2.3	43.7		9.5	21 59.7	14.8		9.5	41 37.3	54.9		9.5	7 13.3	7.5		9.2	37.2	17.8	
9.5	3 17.9	5.7	B	8.9	22 39.1	36.8	K	9.5	56.8	51.6		8.9	42.7	38.0		7.2	34 16.0	46.7	K
8.8	26.6	47.5		8.1	55.7	12.1	K	8.2	42 39.4	3.5	B.	7.7	8 18.5	58.1	K	9.5	22.7	28.4	
8.7	34.5	54.3	K	9.5	23 15.6	24.4		9.2	43 2.8	26.5		9.4	41.4	2.2		9.5	57.0	12.6	B

9ᵘ—11ᵘ **+30°**

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	9ᵘ	+30°			9ᵘ—10ᵘ	+30°			10ᵘ	+30°			10ᵘ—11ᵘ	+30°			11ᵘ	+30°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
5.3	35	4.0	38.6	K	6.8	58	50.0	13.6	K	6.8	20	50.7	28.8	K	8.6	44	43.4	17.9	B	8.1	15	23.4	21.4	K
9.2		4.4	44.6	B	8.6		53.0	10.8	K	8.5	21	14.2	25.6	K	9.5	45	12.2	11.4		9.5		44.5	52.1	
9.5		39.8	0.3		9.0	59	29.5	34.6		9.0		17.5	30.4		8.6	46	1.1	35.5		9.5		57.1	28.2	
9.5		54.1	44.3		9.5		54.1	4.0		8.8		36.4	14.8		9.5		5.8	53.0		9.4	16	2.3	16.1	
9.1	36	52.1	14.3		9.4		56.5	40.5		9.5		46.6	50.2		7.0		37.7	25.1	K	9.5		6.6	7.5	
9.5	37	16.2	26.6		9.0	0	5.6	51.8		9.2	22	25.6	33.5		9.5	47	58.2	4.9		9.5		16.5	19.0	
9.5		20.1	33.9		9.5		27.1	41.2		9.1		48.4	38.3	B	9.5	49	10.9	29.6		9.4		21.7	16.1	
9.5		35.3	57.4		9.0		33.9	58.9		9.0		56.0	11.3	B	9.0		21.8	21.2		9.0		36.3	17.5	B
9.2	38	20.6	59.0		9.5		41.2	24.2		9.2		58.2	49.9		9.5		38.5	18.7	B	9.0		52.5	58.0	
9.4		46.1	56.2		9.5	1	15.1	34.7		9.3	23	35.3	18.3	B	9.5	50	8.9	29.6		8.9	17	11.2	55.5	
8.0	39	14.1	14.5	K	9.5	2	12.0	23.6		7.8		51.2	27.9	K	9.5		9.9	0.6		9.4		19.7	54.4	
9.5		18.2	55.7		9.5		44.5	53.5		8.8	24	14.9	34.8	K	9.4		41.8	18.6		9.4		26.9	35.7	B
9.2		30.6	50.9		9.3		48.8	27.0		9.4		26.4	28.0	B	9.3		46.8	32.7		7.4		31.6	34.1	L
9.5		33.3	35.7		7.5	3	26.5	52.1	K	9.5	25	4.6	21.3		9.5	51	42.5	48.9		6.5		55.2	47.2	K
9.5		41.2	10.4		8.2		33.4	11.2	B	9.4		56.5	57.4		9.2	52	32.6	46.0	K	9.4		56.5	28.1	B
9.5	40	17.3	25.7		8.5		43.1	29.2		9.5	26	36.5	10.9		9.1	53	17.8	24.1		9.4	18	2.8	3.9	B
8.3		31.1	9.2	K	9.5	4	23.4	8.5		9.5		56.3	40.2		6.8		53.9	39.9	K	9.4	19	25.9	53.7	
9.0		36.9	31.5	B	9.5	5	23.1	41.3		9.4	27	7.8	14.4		9.5		57.5	57.7		9.2		51.8	14.5	K
9.4		55.6	6.8		9.4	6	45.1	29.1		9.4		9.9	55.8		8.8	54	19.3	33.8		8.8		59.4	37.8	
9.5	41	47.5	17.0		9.5	7	56.2	17.7		9.5		33.4	22.3		8.8	55	29.4	43.0		9.5	21	11.8	9.0	
9.5	42	38.7	48.3		6.0	8	0.6	1.8	K	9.3	28	3.1	53.2		9.5		35.4	25.9		9.4		22.7	10.8	B
8.8		49.7	50.5	K	9.5		4.7	38.5		9.5	29	51.8	42.3		9.5		55.3	41.3		8.7	22	7.4	52.5	K
9.0	43	18.1	46.6		8.6		43.5	24.6		8.6	30	12.5	15.4	K	9.5	57	17.0	55.0	B	6.8		23.8	47.1	K
8.4		22.9	59.4	K	8.5		52.6	16.4	K	9.4		23.2	32.7		9.5		50.1	59.0		9.0		27.7	46.7	K
9.0	44	49.8	57.0	K	9.0	9	9.5	12.3	K	9.4		33.2	46.5		8.0		57.3	48.5	K	8.4		42.3	41.3	K
9.5		53.5	50.8	B	8.7		24.8	10.8	B	9.4	31	19.5	21.6		9.5	59	11.7	22.4		9.5	24	1.4	54.1	
9.1		57.2	18.6	B	9.4		36.5	3.5		9.3		40.6	38.6	B	9.0		30.9	18.3		9.3		2.1	0.4	
9.4	45	3.2	31.5		9.5	10	0.5	54.9		9.5		51.8	35.3		9.4		46.1	6.3		8.8		47.4	40.3	K
9.4		11.9	0.0		9.3		3.0	59.9	B	8.1	32	51.9	58.3	K	9.0	0	38.1	5.1		9.4		54.3	20.4	
9.5	46	24.1	5.3		8.0		17.5	33.4	L	8.8		52.0	23.8		8.8		59.3	16.6		9.4	25	13.5	51.8	
9.5		26.0	36.0		8.9		25.7	5.2	K	9.4	33	3.2	35.3	B	7.2	1	10.8	50.5	K	9.0	26	4.9	26.9	
9.4	47	43.7	52.8		9.1		56.6	41.5		9.5		13.3	37.8	B	9.4		39.9	25.6		9.5		29.5	17.7	
8.0		44.0	27.7	K	9.2	11	21.6	17.8	B	9.5		18.0	55.7	B	9.0		44.9	31.7		9.5		50.0	12.1	
9.3		49.9	50.8	B	8.5		29.7	3.7		9.5		41.4	56.3		9.5	2	25.4	48.9		9.1	27	7.4	23.5	
9.5	48	54.1	42.5		9.0		46.0	34.6		8.8		47.3	32.3		9.1		43.6	14.6		8.6		22.0	13.6	K
9.0	49	23.0	10.6	B	9.1		51.2	4.8		9.5	34	2.5	43.0		9.4		44.1	44.0	B	9.0		59.9	44.1	B
9.4		43.6	38.0		9.5		56.5	23.2		8.8		25.2	21.3		9.2	3	11.9	50.3		9.5	29	1.3	11.4	
8.5		52.5	37.3		8.4	12	19.6	17.9		9.3		32.0	55.4		9.1	4	15.8	55.4	K	9.4		1.3	3.6	
9.1	50	0.9	7.9	B	9.5		26.8	5.2	B	9.5		37.4	9.3	B	9.5		18.1	17.7		9.4	30	55.4	51.6	
8.1		6.1	14.1	P	9.0		29.6	24.4		7.5	35	8.7	8.3	K	9.4		49.9	36.2		8.1		59.8	34.1	K
9.3		8.1	58.5	B	8.7		51.3	54.1		9.5	36	46.1	40.6		8.8	5	1.0	20.0	K	9.5	31	29.9	49.4	
9.1		15.0	15.0		9.5	13	47.5	34.2		8.4		51.7	16.5	K	9.4		26.7	4.5		9.5		51.4	18.3	
8.8		49.6	55.9		9.5	14	26.6	8.3		9.5	37	29.2	29.3		8.2		34.9	19.7	K	9.4	32	30.9	17.7	B
8.8		50.0	33.5		8.5	15	15.5	34.6	K	9.3		39.1	46.5		9.5		55.4	41.4		8.9		50.4	51.1	
8.9		55.7	41.4		6.5		29.6	21.4	K	9.2	38	1.8	29.9		9.5	6	28.5	56.8		9.0	33	7.4	51.5	
6.0	51	15.4	20.1	L	9.5		44.2	2.4		9.5		17.5	57.6		9.5	7	20.3	28.9		9.5		12.5	44.1	
8.9		27.2	0.5	B	8.4		49.6	56.4	K	8.3	39	20.5	45.0	K	9.3	8	25.5	59.4		9.5		54.7	46.0	
9.4		38.8	29.5		9.5		52.2	0.2		9.2	40	40.1	41.0		9.4		51.4	5.1	B	8.9	34	45.3	29.3	
9.2	52	26.1	22.2		9.4	16	13.1	37.0		9.0		40.2	47.0	K	9.2	9	16.1	7.3		7.5	36	32.4	22.8	L
8.9		27.9	53.5		9.2		40.6	55.3		9.1		44.9	38.3		8.9		28.3	21.7	B	9.2		33.8	33.1	
9.3		56.5	16.3		9.5	17	25.5	28.0		9.2		51.1	2.1	B	9.3		31.4	57.1		7.5		37.4	42.3	K
9.2	53	23.2	42.9		9.3	18	5.1	50.8		6.5		57.2	11.2	K	9.5		45.1	20.9		9.5		44.8	36.9	
9.5		52.5	31.1		9.5		18.5	26.7		9.3	41	2.2	5.6	B	9.4	10	24.9	57.2		9.5		53.7	49.1	B
9.5	54	22.9	52.5		7.5		51.0	24.8	K	8.6		30.8	43.2	K	8.5		53.1	2.7	K	7.5	42	2.4	18.3	K
9.5	56	36.0	46.1	B	9.1		56.3	55.0		8.9		32.9	15.6		9.5	11	23.2	55.0		9.5		15.2	38.6	
7.9		45.1	27.0	K	9.5	19	35.0	57.6		9.2	42	19.1	11.0		9.1	12	18.6	48.1		9.4	43	24.7	37.9	
9.5	57	33.3	49.1		9.5	20	23.1	44.6		8.9		28.2	41.6	K	7.0		24.2	54.9	K	9.4		46.6	59.7	
9.4		40.4	7.0	B	9.4		28.4	14.5		8.9	43	5.2	34.4		9.5	13	49.8	27.5		9.2	44	20.3	24.8	
8.5	58	1.8	35.6		9.4		30.3	29.1		8.2		34.0	0.8	K	8.2	14	41.5	4.0	L	9.1		37.7	35.1	
9.5		2.1	47.0		9.2		36.1	50.8	K	9.5		35.7	7.0		9.4	15	2.7	47.1	B	8.8	46	2.4	7.6	

2201—2260				2261—2320				2321—2380				2381—2440				2441—2500			
	11ˢ—12ˢ	+30°			12ˢ	+30°			12ˢ—13ˢ	+30°			13ˢ	+30°			13ˢ—14ˢ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	46 29.0	22.1		9.5	13 23.7	20.6		7.5	38 21.6	34.2	L	9.5	6 43.6	58.7		8.9	36 44.6	15.3	K
9.5	48 54.6	38.2		9.3	29.3	53.7	B	8.2	25.6	59.6	K	8.6	48.7	32.1	K	9.3	37 53.1	42.8	
9.3	49 46.5	53.5		9.3	15 44.2	21.0		9.5	50.3	7.5		7.7	51.7	34.5	K	9.5	39 33.2	11.9	
9.5	48.7	51.0		9.5	56.2	3.0		8.3	55.8	24.0	L	8.5	7 45.7	9.4	L	9.5	40 40.5	30.1	
8.7	59.6	3.7	K	9.4	16 4.9	52.7	B	9.4	39 19.9	29.4		9.5	8 3.6	18.1	B	9.5	42.1	46.0	
9.5	50 6.7	17.2	B	9.5	30.9	29.0		9.3	40 1.5	14.8	K	9.2	16.7	31.2	K	9.3	42.2	39.0	B
8.6	45.0	37.7	K	8.7	17 59.4	45.6	K	9.5	12.4	48.0		9.1	56.1	6.9	K	9.4	49.0	53.1	
9.0	49.8	35.4		9.0	18 48.7	56.0	K	9.4	27.0	31.7		9.5	9 42.4	22.7		9.5	41 21.5	34.3	
9.5	52 19.3	49.7		8.9	50.1	2.1		6.8	45.7	19.9	K	9.5	10 56.5	26.2		7.8	56.6	34.9	K
9.5	56.7	19.3		9.5	19 12.2	57.2		9.4	41 11.3	8.8		9.5	12 9.8	18.2		9.5	42 51.0	28.4	
9.5	54 5.0	58.6		9.5	59.0	54.5	B	9.5	42 50.5	13.7		9.0	15 43.8	41.0	K	8.7	43 28.6	0.3	K
7.8	19.3	21.4	K	9.5	20 39.7	12.1		9.3	43 0.8	24.3	K	9.5	16 57.5	25.0		9.5	55.3	8.0	
9.5	39.0	48.2		8.4	49.8	37.2	L	9.5	55.1	1.8		9.4	17 24.1	39.5		9.4	57.0	14.6	
9.2	55 51.1	21.2		9.3	50.5	36.0	B	9.5	44 8.2	5.5		9.1	38.8	27.3	B	8.9	44 41.5	29.7	K
9.3	55.0	28.5	B	9.4	21 9.0	44.3		9.5	48.3	43.8		9.3	56.4	13.5		9.1	46.4	17.7	K
9.4	56 7.9	26.5	B	9.4	11.8	42.0		9.5	45 5.8	26.3		9.5	19 0.0	0.4		8.5	45 6.5	43.5	K
7.2	8.3	29.0	K	9.1	14.4	40.8		9.2	23.4	23.9	B	9.5	11.1	9.0		9.0	35.8	54.2	K
9.5	48.7	50.6		9.1	17.0	45.0	B	9.0	35.6	36.9	K	9.5	43.0	48.2		9.5	43.4	55.2	
9.5	58 20.0	10.4		7.9	19.8	23.8	L	9.5	46 13.6	18.9		9.5	21 8.8	15.8		9.4	46.0	21.5	
9.5	24.2	3.5		8.5	22 16.6	17.6	K	9.3	33.5	49.8		9.5	32.0	48.4		9.5	47 38.9	7.4	
9.3	47.3	12.4	B	8.5	17.1	19.3	L	9.1	35.6	54.5	K	9.5	35.0	56.1		7.3	53.3	37.7	B
9.4	58.1	13.0		9.3	21.6	52.8		9.4	47 10.6	17.0		9.5	22 43.8	20.0		8.2	48 4.3	56.1	K
7.8	59 18.0	17.8	K	8.9	31.5	49.5		9.5	49 7.1	34.7		9.5	23 7.7	54.6		9.4	57.2	48.3	
9.5	47.6	32.1	B	9.5	46.4	11.5		9.4	13.3	7.0		9.5	16.2	12.0	B	8.8	50 8.6	53.1	K
9.4	48.5	50.6	B	9.4	55.4	12.2		8.4	14.8	24.8	K	9.0	19.4	30.3	B	9.3	12.8	47.8	
9.5	0 11.0	18.6		9.5	23 50.7	49.8		8.7	55.5	50.7	K	9.5	43.8	10.8		8.4	15.0	59.4	K
9.4	21.8	49.6		7.3	24 38.3	7.0	L	9.3	51 7.8	23.8		9.5	24 4.1	8.4		9.4	27.6	43.5	B
9.5	1 15.8	3.4		9.2	55.3	43.5		9.2	27.5	14.2		9.2	35.3	19.4	B	8.8	50.0	24.5	K
9.5	50.8	24.1		9.5	25 38.3	9.2		8.7	32.5	48.8	K	9.5	42.8	16.1		9.5	51 3.5	33.8	
7.6	58.5	15.9	K	9.5	44.7	22.0		9.5	45.2	51.3		9.5	55.2	15.6		9.4	39.5	25.2	
8.8	2 59.6	35.9	L	8.2	26 18.5	50.7	K	8.4	52 29.2	50.4	K	8.6	25 1.3	33.1	K	9.5	55.0	41.0	
9.5	3 21.4	47.7		9.4	19.6	34.6		9.5	53 40.8	0.3		9.5	13.2	1.4		9.2	52 30.0	26.6	K
9.3	26.9	24.1	B	9.4	27 3.8	43.7		9.0	54 27.3	24.8	K	9.1	29.3	56.8	K	9.5	53 6.4	15.9	
9.4	4 5.4	30.4	B	9.3	12.0	51.3	B	9.4	36.9	51.0	B	9.4	58.2	33.1		9.4	29.0	17.2	B
9.5	7.2	38.3		9.3	15.1	34.7		9.3	55.2	22.0	K	9.0	26 15.3	48.2	K	8.4	55 14.8	47.6	K
9.5	21.5	33.8	B	8.0	50.8	59.6	K	9.5	55 2.5	50.3		8.8	33.7	33.8		9.5	56 40.1	17.8	B
9.5	59.0	55.3		9.5	28 19.7	38.6		9.3	16.7	48.6		9.4	40.2	57.4		9.3	58 19.9	8.1	
8.7	5 20.5	48.6		8.8	36.8	59.6		9.5	29.5	29.7		9.5	48.0	8.0		9.5	37.3	5.4	
9.4	38.2	37.5		8.3	48.3	43.8	K	9.5	56 53.2	55.4		8.9	50.8	52.9	K	9.0	59 3.0	14.6	K
9.5	57.5	56.5		8.2	55.5	15.1	K	8.8	57 15.4	59.8	K	8.2	51.9	28.9	B	9.5	6.5	23.1	
8.9	59.2	4.0		9.5	29 13.3	44.0		9.5	37.3	52.7		8.5	28 20.1	53.2	K	9.5	22.1	19.1	
9.4	6 9.5	54.4	B	8.5	38.4	29.4	K	9.5	58 5.8	56.5		9.1	29 14.8	21.4	K	9.5	53.0	36.6	
9.5	40.1	31.9		9.4	39.3	7.7		9.5	13.5	0.9		9.5	21.5	7.1		8.6	0 10.1	58.1	
9.4	7 26.5	50.2		9.5	30 0.7	22.3		9.5	23.3	56.8		8.1	35.1	30.9	B	9.0	1 0.2	7.2	
8.0	41.7	56.9	K	9.4	15.5	58.6		9.4	59 23.4	12.0	B	9.3	30 13.7	30.8		8.9	20.0	41.7	
9.5	50.2	4.3		9.5	23.3	42.1		9.4	47.0	34.1		9.5	21.7	38.8		8.8	59.5	32.9	
9.5	8 12.0	35.4		9.5	32.4	11.9		9.0	0 44.8	12.5		9.2	22.3	26.8	K	9.5	2 24.5	42.0	
9.5	30.4	47.7		9.4	31 10.4	28.3	B	9.0	48.7	13.5		8.4	35.2	49.6	K	8.8	4 54.6	54.8	
9.4	9 15.0	30.7		9.3	28.1	7.2	B	9.5	1 27.3	15.7		9.5	58.4	46.2		9.1	56.1	15.9	
9.1	26.8	23.8		8.0	32 4.7	2.9	L	9.5	41.5	6.7		9.0	31 35.8	13.8		9.4	5 5.0	46.9	
8.9	27.6	52.5	K	9.1	33 6.3	23.9		8.1	42.2	9.4	K	9.0	42.7	6.0		9.3	12.9	4.0	
9.4	44.8	25.6		9.5	24.9	20.9		8.3	3 26.1	13.1	K	8.7	32 33.2	45.9	K	9.5	47.8	9.5	
9.3	11 7.4	45.5		9.1	34 37.8	26.3	K	9.4	29.8	56.3		9.3	52.0	54.5		8.0	6 32.7	48.3	K
9.3	53.5	0.3		9.2	43.0	31.0	K	9.5	4 7.7	56.0		8.5	33 20.3	47.2	K	7.3	7 39.6	53.8	K
8.5	12 14.7	58.6	K	9.0	35 5.0	32.2	K	9.2	21.3	34.9	K	9.3	48.2	54.5	B	9.5	8 11.1	10.5	
9.5	17.2	37.6		9.1	45.6	54.4	K	9.5	59.2	16.5		9.1	34 54.0	23.2	K	9.5	13.0	31.9	
9.5	23.5	49.2		9.3	36 58.6	53.9		9.3	5 13.4	48.9		9.4	35 39.0	26.3		9.0	18.8	27.0	
9.5	48.7	5.2		9.1	37 3.7	56.9	K	8.2	22.8	45.5	K	9.4	51.9	52.9	B	8.9	55.6	50.5	K
9.5	13 7.3	48.7		9.5	59.0	49.7		9.5	49.1	57.2		8.6	36 25.0	24.7	K	9.3	9 27.8	48.0	
9.3	18.6	57.7		9.4	38 3.6	8.7	B	9.5	6 33.6	59.4		9.4	42.5	48.5		9.5	10 8.0	1.9	

2501—2560				2561—2620				2621—2680				2681—2740				2741—2800			
	14ᵘ	+30°			14ᵘ—15ᵘ	+30°			15ᵘ	+30°			15ᵘ	+30°			15ᵘ—16ᵘ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	10 39.7	37.4		9.4	37 17.2	31.1		9.1	5 18.4	30.5		9.0	30 52.6	30.6	B	9.5	56 25.8	8.1	
9.5	11 8.4	8.0		9.5	38 0.3	38.1		9.2	30.5	50.5		6.5	31 0.4	28.0	K	8.5	59.7	34.6	K
9.5	56.0	53.1		9.4	3.3	56.1		9.2	44.5	58.0		9.3	38.7	41.0		9.3	57 33.0	19.0	B
9.5	12 3.3	6.7		8.9	9.0	12.5		9.5	6 14.0	10.0		8.1	32 2.3	35.1	K	9.5	42.5	21.3	B
8.9	37.0	30.2	K	7.3	45.5	53.7	K	9.5	20.6	56.1		9.3	12.7	15.6	B	9.5	58 37.7	13.6	
9.1	40.7	51.9	B	9.5	39 17.0	53.9		9.0	48.0	19.4		9.5	34.5	20.6		9.5	57.8	19.5	
8.8	57.0	19.1		9.5	31.3	24.3		9.5	7 45.1	6.7	B	9.4	33 19.6	40.5	B	9.5	59 36.8	35.2	
9.5	13 26.7	55.7	B	8.8	40 2.2	7.8	K	8.6	47.5	31.1	K	9.1	19.8	5.4		9.5	37.5	47.6	
9.0	14 8.1	20.2		9.1	4.7	57.7	B	9.0	8 58.4	27.6		8.4	34.7	40.7	K	7.5	0 40.2	17.7	K
9.4	40.9	53.7		9.5	41 56.0	59.7		8.9	9 4.4	31.9		9.4	34.7	45.5		9.5	51.8	20.9	
9.5	15 26.2	7.6		9.5	42 52.0	3.2	B	9.2	24.6	54 0	K	9.0	34 28.1	46.2		9.0	1 9.2	50.8	K
8.3	44.3	19.1	L	9.0	43 13.9	31.2		9.3	48.9	11.6	B	7.5	53.3	24.0	K	9.1	10.3	42.6	R
6.5	52.6	2.6	L	9.5	53.8	14.0		9.3	10 14.0	48.7		9.5	54.4	5.7		9.3	11.0	5.3	
8.1	17 38.3	38.7	K	9.0	44 34.0	47.0		9.1	30.4	50.1	K	8.8	35 17.7	19.4	K	9.4	47.2	50.1	
9.5	18 1.2	3.3		9.0	50.5	56.2	K	9.1	11 26.0	51.9	K	8.1	36 23.1	6.0	K	9.0	51.7	13.6	R
9.2	15.3	23.6		8.9	45 28.0	12.1	L	9.1	28.0	53.2	K	8.8	23.5	56.2	B	9.5	2 31.8	48.7	
8.6	16.2	28.8	L	8.9	41.4	6.1	L	9.2	30.2	8.2		8.7	24.8	59.3	B	8.9	44.0	54.4	
9.5	31.0	53.6		9.5	54.5	42.1		9.2	32.6	42.9	B	9.5	45.0	5.3		8.0	56.2	46.8	K
9.3	19 15.7	29.5		9.5	46 24.6	1.1		9.5	45.6	12.0		8.0	37 33.7	9.0	K	8.8	3 41.7	14.3	K
9.5	41.1	5.9		9.3	47 11.2	5.2		9.5	47.8	5.4		9.5	38 53.8	17.2		8.6	53.3	14.0	K
9.5	20 3.4	2.8		9.3	41.4	11.7	B	9.4	55.7	18.0		9.1	59.1	36.6	B	9.1	4 11.5	34.1	
9.1	28.0	28.1		6.8	48 28.5	39.3	K	8.0	12 51.1	26.8	B	9.4	39 7.7	51.2		9.0	33.7	5.2	K
8.9	41.2	49.2	K	9.0	49 13.5	35.6	L	8.5	13 35.3	4.3	L	9.3	11.6	3.1		8.7	49.4	7.7	K
9.4	21 16.0	18.1		9.5	33.6	10.8		9.5	39.2	10.7		9.5	40 17.9	59.0		9.0	54.4	12.5	K
9.5	57.3	30.4		9.4	37.3	17.7		9.1	47.4	44.1	K	9.2	21.1	36.1		9.3	5 6.9	55.0	
9.0	22 12.3	34.3		8.3	59.5	28.0	K	9.4	14 2.1	25.6	B	9.1	27.4	13.7		9.4	23.4	8.7	
9.2	49.4	11.8	K	8.3	50 5.6	3.2	S	6.0	11.3	7.6	K	9.0	41 49.1	16.7	B	9.5	46.3	14.3	
9.5	23 25.2	31.0	B	9.3	7.3	20.8		8.4	20.0	15.9	K	9.4	54.2	27.5		9.5	6 13.2	26.4	
9.5	29.5	29.0		8.7	17.5	26.0	K	9.5	34.7	52.7		8.9	42 15.7	27.6	B	9.5	17.1	56.0	
9.1	24 43.3	16.3	K	9.4	29.2	6.6		9.5	35.7	37.7	B	8.6	35.8	20.6	K	9.5	56.3	53.1	
9.5	25 36.0	42.2		8.0	51 42.5	3.2	K	9.5	57.1	27.5		9.4	45.5	48.5		9.3	7 17.2	25.7	
9.5	44.9	48.3		8.8	43.6	28.0		9.5	16 53.0	20.6	B	9.5	43 12.0	5.5		9.5	40.8	18.1	
8.2	26 3.1	52.7	K	8.7	47.0	52.2	K	5.2	17 12.3	48.6	K	9.5	25.2	29.9		8.7	43.3	48.4	
8.8	27 40.9	27.6		8.6	52 46.5	42.7	K	9.5	18 40.0	55.9		9.3	44 7.8	33.6		8.7	8 6.2	25.5	L
8.6	58.0	0.2	K	9.4	53 9.3	3.6		9.5	19 0.5	13.4		9.3	45 15.8	33.2		9.2	30.1	36.4	B
5.0	28 22.7	22.8	K	7.9	25.0	26.7	K	8.9	2.4	33.8	K	9.0	28.7	42.5		9.3	9 1.5	49.2	K
9.5	39.6	59.3		9.5	54 2.9	54.0		9.5	20 12.5	13.3		9.4	57.3	35.6		9.5	16.5	2.5	
9.5	30 5.2	51.0		9.5	38.6	55.1		9.5	18.5	43.0		7.3	46 11.3	19.1	B	9.5	29.9	11.0	
9.5	31 12.6	51.8		9.5	56.6	8.1		9.5	34.3	43.4		9.5	29.0	29.9	B	9.5	44.6	54.5	B
9.5	32 16.3	6.7	B	9.1	55 4.5	48.3		9.5	22 7.5	22.0		9.5	47 40.7	40.6		9.1	53.0	34.0	B
7.7	27.7	39.4	K	8.9	14.9	4.9	K	8.6	8.4	35.1	K	9.5	41.0	22.0		9.2	10 14.5	54.0	
9.1	42.0	32.2		9.0	53.8	58.3	K	8.5	13.4	29.3	K	9.5	48 8.8	49.8		9.5	23.3	23.2	
9.3	51.1	54.2		9.1	56 12.5	51.4	B	9.3	23 7.5	39.7		9.4	43.1	8.5		9.5	49.8	59.9	
9.5	33 13.6	40.5		9.2	17.3	45.9		9.4	29.8	39.5	B	9.5	49 10.3	16.1		9.1	11 1.1	8.3	
9.3	15.4	24.3		9.5	56.1	39.7		9.5	32.4	28.9		9.5	10.3	56.3		9.2	12.1	38.7	
9.3	39.7	42.2	K	9.2	57 54.3	2.6		9.5	24 2.2	0.2	B	9.2	51 31.7	11.0		9.4	39.2	38.1	B
9.3	34 9.9	33.7	B	9.2	56.3	11.9	B	9.2	20.0	56.6		9.0	32.5	28.9		9.5	41.3	48.7	
9.2	11.0	27.7		8.9	58 3.5	33.1		9.5	42.0	21.5	B	9.5	38.3	46.4		9.5	45.2	28.1	
8.6	48.3	1.9	L	9.0	59 6.0	48.7		9.5	59.2	7.2		9.4	52 47.7	10.8		9.5	12 48.1	0.3	
9.5	58.7	53.9		9.5	53.1	57.6		8.6	25 13.4	29.3	K	7.5	59.0	25.1	L	9.5	13 11.5	14.6	
9.5	35 7.5	12.5		8.3	0 47.5	35.5		9.5	13.9	41.5	B	9.0	59.7	12.3	B	8.9	11.8	4.7	
9.5	59.0	27.7		9.0	48.6	59.7		9.0	23.3	24.0	K	9.1	53 26.7	43.9	B	8.5	55.1	34.6	K
9.5	36 3.1	16.5		9.4	2 20.7	3.8		8.4	26 55.0	59.3	K	8.5	31.2	47.7	R	8.0	14 43.9	51.5	K
9.5	19.6	32.2		9.5	29.1	49.7		9.5	27 0.0	32.8		9.4	48.3	8.5		9.3	58.3	36.3	
9.3	24.8	22.8	B	9.3	3 2.5	32.3	B	8.0	2.6	47.2	K	8.3	54 22.4	2.8	K	9.5	15 4.2	59.0	
9.4	56.6	37.6		8.3	6.9	52.9	K	9.3	28 13.4	7.6		8.5	25.7	31.4	B	8.8	53.8	42.5	
8.6	37 0.5	19.2		9.0	55.6	32.8		8.8	29 21.4	28.5		9.3	29.0	36.4		9.5	16 17.4	2.5	
9.2	6.2	34.6	B	8.7	4 20.6	18.3	K	9.2	33.0	13.9		5.0	55 38.2	15.1	K	9.4	54.0	7.2	
9.4	13.2	26.8		8.8	5 15.7	31.8	B	9.5	30 7.1	7.0		9.4	46.5	27.2	B	9.3	59.2	11.4	
8.9	15.6	43.1	K	8.8	17.9	5.5	L	9.2	9.4	36.2		9.2	56.2	27.2	B	9.5	17 1.2	28.2	

2801—2860				2861—2920				2921—2980				2981—3040				3041—3100			
	16ᵘ	+30°			16ᵘ	+30°			16ᵘ—17ᵘ	+30°			17ᵘ	+30°			17ᵘ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	17 6.6	10.4	B	7.5	35 44.2	32.8	K	9.2	56 15.6	4.0		9.5	18 11.2	14.4		9.4	35 30.1	43.3	
9.4	17.4	4.8	B	8.5	36 9.3	42.1	L	9.2	17.9	46.8		8.5	19 22.0	53.3	K	9.5	36 4.5	13.0	
9.0	17.6	37.2	B	9.4	21.3	35.3		9.4	44.9	12.4		8.8	50.3	16.2	K	9.5	47.1	34.3	
9.5	31.9	11.5	B	9.5	37 3.7	25.4	B	9.5	55.5	11.5		8.2	20 55.2	55.0	K	9.4	37 14.9	36.1	
9.3	44.2	22.2		9.5	21.2	36.1		8.4	57 6.3	2.0	K	9.5	21 5.0	3.4		8.6	26.8	26.1	L
9.2	18 17.8	56.7	K	9.4	38 17.3	10.9		9.2	11.9	12.8	K	9.2	30.0	32.3		9.5	47.7	3.2	
9.5	29.2	38.8		9.4	24.5	1.6		9.5	50.0	35.7		8.8	33.8	59.5		9.0	58.5	55.7	K
9.3	43.8	19.9		9.5	43.8	30.7		9.5	0 50.9	51.7		9.5	41.4	51.6		9.5	38 25.0	20.9	
9.5	59.4	56.4		9.5	39 1.8	56.9		8.5	1 1.9	37.3	K	9.4	41.7	54.4		9.3	59.3	5.2	
9.2	19 23.6	22.7		9.5	42.2	12.1	B	8.9	2 2.0	20.1		8.7	49.9	14.4	L	9.5	39 10.1	6.8	
8.8	20 8.5	35.8	K	8.5	40 5.3	16.0	K	8.6	18.5	44.8	L	9.3	22 5.4	31.0		9.0	39.5	44.3	K
9.5	17.0	52.5		9.0	7.8	14.5	K	8.3	41.0	21.9	B	9.4	12.5	42.3		8.2	50.2	36.7	B
9.2	20.4	13.9		9.5	47.4	34.6		9.5	55.6	38.2		8.7	12.5	31.2		9.5	40 1.6	10.9	
9.5	45.7	48.3		9.4	57.2	12.2	B	9.5	3 21.4	22.4		9.5	22.9	39.3		8.7	5.5	35.3	K
9.4	21 7.8	5.3		8.8	41 35.3	19.4	K	9.5	50.4	7.5	B	9.4	29.9	41.3	B	9.3	7.4	2.6	
8.6	22 50.4	56.5	K	9.5	41.8	36.7		8.4	58.7	53.6	L	9.4	46.4	42.1		9.4	26.3	16.1	
9.1	55.8	3.0		9.5	42.2	39.0		9.3	4 3.6	34.6	B	8.1	47.8	21.9	B	9.4	51.3	50.7	
9.3	23 27.2	26.0		9.5	42 42.8	53.0		9.0	7.3	31.3	K	9.2	52.8	1.0		9.5	41 19.5	8.5	
9.3	24 7.3	28.1		9.5	43.8	7.1		8.0	7.5	31.7	K	9.5	59.0	8.2		9.1	42 7.5	31.9	
9.2	41.8	24.9		6.9	43 37.5	12.7	K	9.2	14.0	46.7		9.4	23 28.9	23.0		9.4	14.5	40.1	B
8.4	50.1	54.1	K	9.4	44 4.2	1.8		9.5	5 22.0	22.2		9.2	36.0	48.4		7.8	16.7	24.4	B
9.3	25 3.8	35.8		9.5	38.3	14.9		9.5	32.0	15.0		9.4	24 25.0	49.5	B	8.8	24.7	46.1	
9.1	5.6	19.7		9.3	50.4	53.6	K	9.2	42.7	39.5		9.2	25.6	22.9	B	9.5	43 51.5	59.2	
9.5	18.0	29.3		6.1	59.5	4.1	L	9.3	6 10.4	46.0		9.5	26.4	42.9		9.5	44 17.8	47.1	
9.5	18.6	6.2		8.8	45 6.4	39.2	B	9.1	7 0.1	37.2	B	9.5	29.1	31.3		9.5	28.2	30.3	
9.5	36.8	54.7		9.3	27.8	24.1		8.3	7.6	5.5	K	8.5	31.2	58.8	K	9.5	58.5	43.7	
8.9	26 17.3	35.7	K	8.8	43.0	22.8	B	9.0	10.5	16.2	K	9.1	25 1.5	46.0		9.4	59.6	1.6	
9.1	39.9	5.8		9.3	44.5	16.1		9.3	16.1	37.7	B	9.5	6.9	12.0		8.3	45 20.2	8.6	
7.9	41.3	25.7	K	9.3	46.8	31.4		9.0	17.0	44.0		9.5	11.2	54.9		7.2	23.5	2.2	B
9.5	44.3	51.3	B	9.5	46 6.4	3.6		9.5	8 1.4	53.9		9.5	20.0	1.8		9.3	24.4	12.6	B
8.2	49.0	31.4	K	9.4	29.8	20.5		9.5	10.9	36.0		9.5	22.5	29.9		8.3	31.5	16.5	
8.6	27 7.1	45.5	K	9.5	47.3	54.2		9.3	24.9	56.2		9.5	43.8	2.1		9.5	46 24.5	46.8	
9.5	48.5	18.9		9.5	57.3	18.3		9.5	25.3	6.2		7.1	26 8.0	26.1	K	9.2	29.9	7.3	K
6.9	50.9	48.7	K	9.5	58.6	8.7		9.5	35.7	1.9		9.4	43.3	3.9		8.3	58.8	47.1	K
8.2	28 5.5	22.9	K	9.4	47 2.2	39.1		9.3	53.5	9.0		9.2	27 12.7	2.8		9.3	47 5.5	9.2	K
9.0	6.5	14.2	B	9.5	15.8	28.7		8.0	9 37.5	28.2	L	9.5	57.2	34.9	B	9.4	10.6	59.1	
9.5	24.0	12.9		9.5	19.2	58.0		9.4	54.0	19.2		9.5	58.8	32.4		8.7	16.3	57.1	B
9.4	36.2	34.2	B	9.4	28.7	56.2		9.1	11 42.2	39.2		9.5	28 21.6	58.5		7.9	48 17.6	24.1	B
9.4	49.3	24.0		9.5	48 33.5	5.6		9.5	51.0	35.1		9.2	27.0	13.8		9.4	28.0	49.9	B
9.4	59.4	25.0	K	8.1	43.5	40.8	B	9.5	12 5.9	28.5		9.1	30.9	39.1		9.4	34.0	38.1	B
8.6	29 52.8	54.5	K	9.3	49 12.6	38.3	K	9.5	41.5	44.4		9.5	35.7	4.6		9.5	36.2	32.3	
9.0	30 9.1	31.6	K	8.0	24.1	55.7	K	9.5	50.0	3.5		9.5	36.0	14.5		9.3	56.0	54.6	
8.4	11.3	2.3	K	9.5	50 27.8	48.6		9.5	13 35.7	47.2	B	9.4	39.6	52.5		9.0	49 16.7	2.5	K
9.2	18.6	31.4	K	9.5	48.2	8.7		9.5	50.3	9.9		9.4	29 27.7	10.3	B	9.0	18.6	53.0	K
9.5	31.3	53.4		9.5	48.8	3.1		8.9	55.0	37.5		9.3	43.3	2.9		9.5	46.5	1.5	
9.4	34.6	59.9		9.5	51 57.8	22.3		9.5	55.2	55.0		9.4	44.8	8.0		9.1	50 48.9	57.8	
9.4	43.2	28.0	B	9.5	57.8	29.7		9.3	14 7.8	18.0		9.3	53.8	3.2	B	9.0	55.8	23.0	K
9.5	48.6	21.6	B	9.1	52 16.3	31.5	K	9.1	13.0	20.3	K	9.4	30 11 0	27.5		9.2	51 8.1	45.7	K
9.5	31 1.5	35.5	B	9.5	32.9	17.5		9.3	43.2	41.1	B	9.5	12.5	42.6		8.7	47.2	18.1	
9.4	30.2	45.3	B	9.4	44.0	57.0		8.4	57.9	22.0	K	9.2	19.4	34.3		9.5	52 9.9	15.8	
9.0	32 8.8	18.4	L	8.5	56.6	48.5	K	9.3	15 38.1	41.0	B	9.5	45.0	41.6		9.2	28.5	10.7	K
9.5	10.7	51.9		9.5	53 4.3	53.0		9.5	45.3	3.4		9.4	49.2	37.8	B	9.5	29.0	20.6	
8.6	22.0	54.1	K	9.2	11.0	20.3	K	9.5	16 13.7	53.5		6.0	31 5.6	52.7	K	4.5	57.0	12.5	K
9.5	45.3	55.8		9.5	21.2	10.9		9.1	25.4	35.5	K	9.2	32 11.5	21.7	K	9.5	53 15.7	21.8	
9.3	33 24.8	54.0	K	9.3	45.8	59.9		9.5	25.5	7.8		9.2	18.0	12.3	K	9.0	23.1	35.9	
9.5	31.2	57.6		9.5	55 41.6	8.6		8.5	56.6	40.2	K	9.4	39.4	43.3		7.7	29.3	5.7	K
9.2	34 28.0	55.2		9.5	43.0	14.7		9.4	17 1.0	45.4		8.5	57.4	17.2	K	9.5	34.1	12.7	
8.1	47.9	8.2	K	9.5	54.5	21.1		9.4	20.8	51.7		9.3	33 5.0	51.7	K	9.5	53.2	49.3	
8.3	35 36.1	25.4	K	9.4	58.4	15.3		9.5	18 7.7	43.0		7.5	42.4	19.3	K	9.4	55.4	0.7	
9.4	39.3	22.8		9.3	56 13.7	25.7		9.2	7.9	33.7		8.7	34 18.9	53.5	K	8.0	54 0.8	44.1	L

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ᵘ—18ᵘ	+30°			18ᵘ	+30°			18ᵘ	+30°			18ᵘ	+30°			18ᵘ	+30°	
m				m				m				m				m			
8.8	54′ 32.″7	25.0		9.5	10′ 5.″7	38.′5		9.5	25′ 57.″0	33.′7		8.0	38′ 10.″0	15.′9	S	9.2	48′ 44.″6	7.′9	B
9.5	52.1	2.5		7.1	20.8	21.2	B	9.1	26 45.5	51.2		9.5	21.2	18.3		8.8	49 3.6	8.6	R
9.4	58.7	8.4		9.0	32.9	40.0	B	5.5	27 18.6	27.1	K	9.1	43.8	38.0		9.5	14.3	10.3	
9.4	55 29.2	59.0		9.5	36.7	54.0		9.3	20.1	10.1		8.8	44.1	51.8		7.5	20.6	56.3	L
9.5	48.0	58.2		9.5	44.8	59.5		9.3	27.0	18.1		8.9	52.6	14.8		8.5	26.6	41.9	B
7.0	54.7	39.3	L	9.5	54.9	56.0	B	8.2	44.2	3.4	K	9.5	39 5.5	50.4		9.5	36.9	39.8	
9.3	56 31.4	48.6	B	8.9	58.9	27.6	K	7.5	53.4	47.1	K	9.5	23.8	2.8		9.1	40.8	26.1	B
9.5	37.2	7.2		8.9	59.2	8.6	K	9.5	28 4.9	54.7	B	9.5	45.6	47.9		8.2	41.7	35.8	B
8.7	46.6	47.1	L	9.5	11 21.3	55.9		9.2	10.2	13.8	B	8.7	46.1	3.7	K	9.5	50.3	56.1	
9.1	51.5	1.8		9.4	51.4	38.1		9.5	11.0	40.1		9.0	40 20.2	16.3	K	9.5	56.7	8.4	
6.7	57 4.3	33.1	L	9.1	12 1.3	58.3		9.1	13.3	56.7	K	9.5	39.3	14.6		8.0	50 13.6	7.7	K
8.0	24.2	20.6	L	9.5	4.5	2.6	B	9.5	14.2	14.4		8.9	48.2	24.5	B	8.9	31.4	29.7	K
6.7	58 22.8	24.1	L	9.5	11.9	32.6		9.4	18.9	31.3		9.3	57.1	47.0		9.4	34.7	34.2	B
9.3	34.7	53.5		9.5	25.5	20.2		8.9	19.6	26.6	B	7.8	41 4.1	26.0	K	9.5	39.2	13.7	
9.5	59 7.2	11.3		8.9	13 7.9	31.9	B	9.5	22.9	58.4		8.7	6.1	37.3	K	8.9	41.7	37.6	K
9.3	14.3	12.8		9.5	11.6	32.6		8.5	37.8	25.4	K	9.4	18.6	44.6		9.5	45.6	36.1	
8.6	19.2	33.0	K	9.0	30.4	51.6		9.5	29 3.5	59.2		8.9	43.0	16.2		9.5	52.0	55.1	
9.5	27.2	48.4		9.3	42.4	28.4		8.6	6.4	21.3	K	9.0	55.4	57.0		8.6	51 4.5	2.7	
9.5	0 2.2	28.6		9.0	44.8	58.2	B	9.3	38.2	11.7	B	9.2	57.6	37.2		9.5	11.6	15.3	
9.5	27.0	5.0		9.5	14 9.8	57.0		9.3	40.3	17.2		9.5	42 6.7	15.7		9.5	31.4	44.9	
9.5	29.9	10.5		9.4	27.3	25.6	B	9.5	47.9	12.0		8.8	37.6	3.3		9.5	37.5	2.9	
9.3	53.4	13.5		9.5	56.9	57.8		9.5	58.7	13.7		9.5	57.9	53.4		9.3	52.8	54.8	
8.9	1 8.0	14.9		9.5	15 15.2	32.3		9.0	30 7.5	31.3	K	8.5	43 3.2	31.2		9.2	57.2	23.3	
9.3	10.1	18.6	B	9.2	16 14.9	47.1	K	7.0	44.3	28.6	K	8.9	17.6	11.2		8.6	52 18.2	23.6	
9.2	10.4	37.5	B	9.5	20.8	55.6		7.8	31 1.9	19.9	L	9.5	23.2	3.3		9.5	28.7	34.6	
9.2	15.7	55.1		9.1	44.4	19.1		9.5	10.9	54.2		9.0	53.1	37.4		9.5	29.1	20.3	
8.8	24.0	53.7	K	9.0	17 0.3	1.8		9.5	35.6	49.1		8.9	54.9	25.7		9.5	31.6	18.1	
5.0	34.1	33.0	R	9.4	14.5	5.0		8.3	36.3	35.6		9.5	58.4	47.3	B	9.1	34.1	7.8	
9.5	47.7	22.1		9.5	22.0	10.5		9.5	44.7	58.4		9.5	44 7.0	44.3		9.4	46.0	4.3	
9.3	2 1.0	4.1		8.8	25.1	2.5	L	9.5	32 10.8	34.4		9.4	10.8	53.2		9.4	53.3	21.0	
9.5	25.4	37.5		9.5	46.9	5.5		9.5	23.3	25.2		9.5	11.5	51.8	B	9.2	58.4	13.1	
9.5	38.5	14.0		8.0	18 24.1	12.9	B	9.0	56.5	46.0		8.8	11.6	32.5		9.2	53 4.2	53.4	
7.5	43.2	58.7	B	8.0	24.9	22.1	B	8.9	33 3.0	38.0	K	9.5	11.6	45.3		9.3	20.3	53.4	
9.4	59.9	6.3		9.5	26.2	17.2		9.1	3.1	34.6	K	9.5	12.5	50.3		9.5	28.6	47.5	
9.5	3 16.0	58.5		8.4	34.1	29.7	B	7.4	6.5	19.6	B	9.2	34.0	3.3		9.1	33.5	14.8	B
9.4	36.7	50.1	B	9.3	19 3.7	22.0		9.4	12.6	34.5		9.4	44.3	18.0		9.0	49.7	38.6	
var	37.1	59.7		8.4	4.0	43.6		9.5	18.5	6.5		8.7	46.6	11.8	K	9.4	54 9.8	21.3	
7.2	39.4	26.4	L	9.3	13.0	43.9		9.5	22.2	6.9		9.4	46.8	20.3	B	9.3	14.0	25.0	
9.5	45.9	39.9		9.5	55.4	14.0		9.5	42.5	21.1		9.1	51.2	35.4		9.3	16.3	14.8	
8.7	4 16.9	11.8	K	8.5	20 4.0	57.7	K	9.5	34 17.0	48.1	B	9.5	45 5.4	12.0		9.2	18.3	53.9	
9.3	17.7	3.3		9.2	12.0	0.2		9.5	26.0	43.1		8.4	7.1	8.1	K	9.5	18.7	46.0	B
8.0	33.8	49.2	L	9.1	15.2	54.7	K	6.3	31.8	43.9	K	9.3	14.5	15.9	B	9.4	34.0	1.6	
9.3	5 19.9	47.5		9.1	21 7.9	37.8		9.5	39.2	21.5		9.0	24.9	11.0	B	9.5	38.6	24.3	
7.9	53.4	5.8	L	9.3	8.3	14.5	B	8.3	55.1	9.8	K	9.0	38.3	1.8	B	9.4	55 3.8	13.7	
9.3	6 29.2	15.3		9.5	18.2	10.1	B	9.1	59.4	35.6		9.2	40.5	6.3		9.5	6.6	36.4	
9.5	7 7.6	17.8		6.8	21.1	53.3	K	9.5	35 0.8	48.1		8.8	58.7	34.8		9.4	6.7	20.7	
9.1	11.2	37.5	B	9.5	30.0	17.5		9.5	5.9	47.4		9.0	46 15.4	54.8		9.5	7.2	38.0	
9.2	14.1	8.4	K	9.0	56.4	18.8		8.3	11.2	16.0		9.3	23.5	18.0		8.6	26.9	16.8	
9.4	18.6	44.5		9.5	22 15.9	11.3		9.0	42.1	43.7		8.6	26.9	27.6	B	8.8	52.0	47.1	
9.0	44.9	46.4	K	9.5	54.9	11.8		8.9	42.5	39.9	B	9.3	33.6	2.6		8.4	56 25.5	51.1	B
9.2	8 11.5	3.1		8.8	57.6	4.8	B	7.4	42.8	9.0	K	9.5	48.8	53.3		9.3	30.5	34.1	
9.3	36.1	5.6		9.5	23 19.7	23.0		9.5	36 19.4	55.3		9.0	47 1.5	49.5		8.5	33.1	14.1	K
9.5	49.8	59.9		9.5	21.2	4.4		9.5	21.5	42.8		8.5	23.6	15.6	K	9.2	58.9	14.3	K
9.4	54.0	43.8	K	9.5	24 6.4	42.3		9.5	21.5	35.8		9.2	57.5	26.9	B	9.5	57 28.0	55.6	
9.4	56.8	52.6		9.2	24.1	57.2		9.5	59.7	50.5		9.1	48 0.9	48.0		9.4	58 5.8	11.4	
9.5	9 20.7	50.1		9.2	25 25.4	44.7	K	9.3	37 3.3	14.9		9.3	8.3	4.5		9.1	15.1	6.7	
9.4	21.7	47.6	B	9.5	28.8	58.3		9.3	5.0	7.2		9.5	19.3	52.5	B	8.7	24.0	47.9	
9.1	33.2	46.6	K	8.8	32.3	14.8	B	9.2	12.1	28.4	B	9.5	23.7	19.2		9.3	25.1	0.2	
9.3	50.6	57.9	K	9.1	39.6	11.4		8.0	30.4	59.8	K	9.4	31.5	9.9		9.0	30.7	38.5	
9.5	10 3.1	6.6	B	9.4	43.1	57.3	B	9.5	43.6	19.7		9.5	34.2	49.7		9.4	33.9	45.6	

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
18ᵐ—19ᵐ		+30°		19ᵐ		+30°		19ᵐ		+30°		19ᵐ		+30°		19ᵐ		+30°	
m	′	″		m	′	″		m	′	″		m	′	″		m	′	″	
9.5	58	39.4	13.9	9.4	5	51.5	31.8	9.2	15	44.5	59.9	K	9.5	22	1.8	41.3	9.0	29	15.4	28.5	K
9.0		45.3	47.7	9.5	6	6.5	3.5	9.5		51.2	25.5		9.5		3.0	48.5	9.5		22.6	55.1	B
9.5		47.2	6.3	9.5		41.1	5.8	8.8		57.5	1.2		9.5		9.9	7.4	9.5		28.5	16.8	
9.5		48.4	51.4	7.7		44.5	6.4	K	7.7		58.3	5.6	L	8.7		17.9	0.9	R	9.3		36.0	3.0	
9.5		54.7	38.6	9.4		49.6	3.5		9.3	16	1.2	58.3	K	9.5		41.5	32.9		7.6		54.4	57.8	K
9.3	59	0.9	52.2	9.5		51.6	31.1		9.2		4.2	53.4		9.5		54.2	23.2		8.2		55.0	4.8	
9.5		7.1	12.9	9.1		52.0	56.1	B	8.8		13.0	46.7		9.3		59.6	53.5		9.2	30	4.5	48.4	
9.2		8.6	7.8	9.5		56.4	54.6		9.5		23.1	23.0	B	9.0	23	8.7	37.6		9.2		5.6	36.4	K
6.5		23.1	31.0	K	9.4		57.0	56.1	9.5		23.4	28.6		8.3		27.5	0.2		9.2		19.2	52.7	
9.4	0	11.2	51.9	9.0	7	13.1	21.0	9.5		37.7	38.0		7.4		36.4	15.4	L	9.1		22.6	34.7	K
9.5		22.1	3.9	9.0		20.6	45.5	8.8		38.4	43.2		9.2		38.5	51.1		9.5		28.4	31.2	
9.0		28.9	44.7	9.5		24.5	4.7	9.5		39.0	55.8	B	9.5		39.2	6.4		9.1		40.1	0.0	B
8.2		31.8	13.1	S	9.0		53.2	28.1	B	9.1		43.1	8.8	R	9.4		48.9	57.4	B	9.5		46.2	26.0	
9.5		37.7	8.4	9.2		56.8	40.0		9.5	17	29.7	9.4		9.4		51.1	5.9		8.5		49.7	41.1	K
9.4		45.4	25.3	B	9.4		58.7	48.9	9.5		42.1	49.4		8.7		51.4	26.2	R	8.2		56.3	54.9	K
9.5		54.8	57.8		9.5	8	2.1	28.9	9.5		56.6	35.8		9.5	24	23.8	5.2		8.5		59.9	58.8	K
9.3		59.6	20.5		9.5		10.5	4.0	9.5	18	21.4	32.4		9.5		24.0	41.5		9.2	31	4.6	35.6	
9.2	1	13.2	20.7		9.5		26.1	0.5	9.5		26.9	44.5		9.4		34.0	10.0		7.8		9.5	0.4	L
9.5		21.5	4.4		7.8		42.5	6.2	L	9.3		27.1	21.8	K	9.5		38.9	42.5		9.5		15.6	43.3	
9.5		21.8	40.7		9.5		46.7	30.0	B	9.5		28.8	12.9		9.4		41.3	55.1		8.1		40.5	6.2	
9.3		32.2	22.0	B	9.5		58.1	50.9		9.5		34.5	5.9		9.5		42.8	12.0		9.5		54.1	29.8	
9.5		40.3	25.0		9.5		59.0	48.2		7.0		40.9	46.0	K	9.5		58.6	25.2		9.5		57.9	45.3	
9.4		41.5	34.1		9.5	9	17.5	0.5		9.4		42.5	28.0		7.5		59.5	17.3	K	9.5		59.8	42.9	
9.5		53.0	16.2		9.5		19.0	48.0		9.5		47.5	31.5		9.5	25	11.3	55.5	B	8.9	32	3.7	1.5	
7.8		54.4	1.0	K	9.5		19.5	32.7		9.5	19	0.6	32.5		8.3		13.0	7.8	B	9.4		4.2	31.3	B
9.3	2	2.1	51.4		9.5		25.8	26.3		9.5		1.2	23.1		9.5		27.5	57.0		9.3		19.1	8.8	
8.6		10.3	26.7	K	9.5		26.0	47.7		9.5		35.0	5.9		9.5		30.5	56.3		9.4		26.4	6.0	B
9.5		13.4	30.4		9.1		41.8	13.2		9.0		38.6	9.5	R	9.3		41.8	52.8		9.2		29.9	47.7	
7.8		28.0	24.2	K	9.2		44.4	58.6		9.5		43.4	6.3		9.2		52.0	48.2		9.5		31.4	25.8	
8.7		28.1	52.6		9.4		45.5	5.2		9.5		48.4	30.2		9.0		54.7	38.3		9.1		34.6	21.0	
9.0		29.5	33.6		5.8		48.9	16.5	L	9.4		50.2	4.5		8.8	26	5.5	0.7		9.3		40.2	11.9	
8.9		31.7	17.3	K	9.1	10	1.8	26.7		9.4		52.1	49.7		9.4		12.6	7.0		9.4		46.1	8.6	
9.5		45.1	18.6		8.6		16.7	39.0	K	9.1		54.7	38.6	K	8.1		16.1	54.5	B	7.9	33	0.2	53.4	
9.4		47.0	50.2		6.9		21.8	59.2	L	8.7		55.3	41.6	K	9.2		26.0	26.4	B	9.0		1.1	35.1	
9.1		50.7	38.4	K	6.8		22.0	46.9	L	9.5		57.3	3.6		9.3		28.4	28.9		9.0		34.3	48.7	
9.1	3	4.6	35.8	K	9.3		49.7	39.6	K	9.5		58.7	10.0		9.5		30.8	42.4		9.4		37.2	18.7	
9.4		13.5	15.3		8.0	11	9.3	52.9	K	9.4	20	8.0	23.0		9.5		43.5	34.5		7.3		48.0	4.8	L
7.0		14.7	4.4	L	9.5		30.4	50.4	B	9.5		24.3	6.4	B	9.5		43.8	57.3		9.0	34	1.2	19.4	B
8.5		17.2	39.6	K	9.5		35.0	45.5		9.3		35.5	47.9		9.4		49.4	57.3		9.2		2.0	18.1	
9.0		32.4	12.2		9.5		35.2	46.7	B	9.0		38.2	54.1	K	9.4		59.6	2.8	B	9.0		8.1	27.6	
9.5		42.3	3.3		9.5		35.4	50.4	B	9.3		48.6	34.6		8.7	27	16.3	50.1		9.3		11.3	27.2	
7.0		46.8	19.9	L	6.9	12	24.9	45.4	K	9.5		51.4	58.3		6.9		18.3	56.1	L	9.3		17.6	38.7	B
9.3		48.5	47.8		9.5		32.0	19.2		8.8		53.5	0.1		8.5		30.7	39.6		9.4		26.6	45.1	
9.2		57.1	7.1	B	9.4	13	1.9	43.4		9.1	21	0.4	29.7		9.4		35.2	5.3		9.4		33.5	6.5	
9.4		59.8	40.3		8.8		6.8	39.9		9.0		4.8	50.8	K	8.5		36.3	23.2		8.9		34.8	37.1	
9.5	4	32.9	28.9		9.2		19.7	38.6		9.5		7.9	31.6		9.5		50.5	28.9		9.4		39.7	13.1	
9.2		36.8	47.7		9.2		23.2	53.9		9.5		14.1	21.3		9.4		52.8	56.8		9.0		46.8	57.7	B
9.5		40.0	3.2		9.5		24.5	3.0		9.4		17.5	5.8		9.5		55.0	46.1		9.0	35	9.7	37.6	
9.4		40.3	29.8	B	9.5		27.8	11.9		9.5		17.5	18.3		8.7		55.5	0.6	K	9.5		20.1	18.6	
9.5		43.1	6.2		9.5		33.7	10.9		9.5		17.8	42.8		9.5	28	1.1	44.3	B	8.8		33.5	19.3	K
9.3		47.4	8.1		9.5		37.8	5.2		9.5		23.2	53.4		9.5		12.0	10.9		9.3		33.6	35.4	
9.2	5	1.5	1.1		9.5		47.6	42.9		9.1		24.6	36.0	R	9.0		15.8	26.8	B	7.5		34.8	23.3	K
8.2		9.7	51.2	B	9.5		48.2	37.6		8.8		25.5	7.2		9.5		29.9	53.1		9.5		37.5	3.2	
9.0		12.2	55.5		9.5		53.8	27.2		8.7		28.3	24.9	R	9.5		42.6	15.3		9.4		40.5	53.2	B
9.1		12.7	19.2	B	9.2	14	8.1	50.8	K	9.3		33.1	58.5		9.3		46.0	28.5		9.5		54.3	57.5	
9.5		20.8	27.5		8.9		23.1	49.0	K	9.3		38.8	40.7		9.3		54.0	48.5	B	9.4		54.4	59.0	
9.4		32.7	54.4		9.0		23.6	36.6	K	9.3		41.5	53.0		9.0		56.2	48.6	B	6.5		59.2	28.3	K
9.5		34.2	13.0		9.1	15	0.0	8.8		8.1		42.6	7.6	R	9.2	29	0.2	29.5	B	8.9	36	4.8	42.9	
9.3		36.1	28.3		9.4		11.0	54.6		8.8		47.7	39.1		9.3		4.8	12.6		9.5		33.9	57.6	
9.3		44.5	32.5		9.5		36.9	4.1		9.4		59.4	29.2		9.0		13.8	27.9		9.2		39.6	36.6	K

3701—3760				3761—3820				3821—3880				3881—3940				3941—4000			
	19ᵘ	+30°			19ᵘ	+30°			19ᵘ	+30°			19ᵘ—20ᵘ	+30°			20ᵘ	+30°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	36 40.3	1.5		9.3	43 32.8	55.9		9.4	51 23.6	21.3	B	8.0	59 0.8	5.9	K	9.5	6 27.0	4.3	
9.2	41.3	57.2		9.4	44 1.3	26.0		9.4	24.1	25.3		9.5	18.7	15.7		8.7	34.4	27.6	
9.2	48.5	19.0		9.2	1.9	30.2	K	9.3	24.6	4.1		9.5	25.0	25.7		9.2	49.8	49.9	K
9.4	49.9	59.1		8.7	10.1	51.4		8.5	25.3	41.0	K	9.4	47.6	33.6		9.2	57.6	54.3	K
9.5	56.2	52.1		9.2	10.7	54.1		8.9	25.6	34.3	B	9.5	0 3.3	58.2		9.5	7 3.1	26.9	
6.2	37 28.1	19.9	L	9.5	18.8	29.1		8.4	27.3	27.9	K	9.5	5.3	7.7		8.3	12.2	2.7	K
9.3	31.5	0.9		9.3	26.4	5.2		9.5	31.9	19.8		9.4	8.0	0.0	B	8.5	21.7	40.5	
8.5	39.7	35.4		9.2	39.8	40.3	K	9.0	40.8	42.5		8.9	9.8	2.5	K	9.3	22.6	17.8	
8.8	47.9	15 3		8.1	43.1	24.0	B	9.3	43.7	31.0		9.4	11.8	55.2	B	9.5	42.5	2.2	
9.5	50.5	48.0		9.5	48.9	38.6		9.5	56.4	23.7		9.0	14.8	29.2		9.5	8 4.8	45.9	
9.3	52.7	39.8		9.2	51.1	0.9		7.7	58.9	51.6	K	9.2	36.4	11.8		9.3	10.5	5.1	
9.2	52.9	57.3	K	9.1	52.8	10.9		9.5	52 12.3	27.4		9.5	38.5	58.4	B	9.3	10.5	0.2	
9.5	38 1.4	30.4		9.3	45 0.4	30.9		9.5	16.5	48.9		9.5	45.5	38.0		9.0	23.8	22.4	
9.5	8.9	50.8		9.5	10.0	55.2		9.3	47.1	1.9		9.1	50.8	5.4	K	9.2	23.8	26.4	
9.5	16.7	37.6		9.4	10.1	1.3		9.2	50.7	43.1	B	8.7	54.2	47.4		8.9	32.0	27.5	
9.4	32.6	41.1		9.5	15.5	33.6		9.0	52.8	40.0	K	9.5	55.8	39.2		9.4	32.4	15.9	
9.3	34.4	29.0		9.5	25.2	13.6		5.8	52.8	35.3	K	9.5	59.3	40.9		9.1	33.1	32.0	
9.4	39.5	35.3		9.4	47.8	41.5		9.0	54.1	28.6	K	9.2	1 1.7	56.1		8.6	9 8.0	46.9	
9.5	50.0	31.5	B	6.8	46 0.0	45.7	K	9.0	53 0.3	6.1		9.3	3.3	33.7		8.3	16.7	10.4	
9.5	52.8	26.0		9.5	3.0	43.7		9.2	14.5	55.0		8.7	6.8	49.9	K	9.1	26.2	56.2	
9.3	53.5	18.9		9.3	9.9	41.4		9.3	34.9	18.7		8.9	30.6	35.0	K	9.5	46.5	12.0	
9.5	39 27.2	53.2		8.9	20.2	53.7	K	9.4	37.5	5.1	B	9.5	50.7	51.4		9.0	47.5	49.8	B
9.4	28.1	48.9		9.1	24.3	7.7	B	9.3	38.9	26.0	B	9.0	54.4	52.9	B	9.3	47.7	42.2	
9.5	35.7	50.8		9.5	26.3	8.4		9.0	55.3	26.1	B	9.1	58.9	25.1	K	9.1	49.4	32.6	
8.4	39.3	27.4		9.1	29.5	48.5		8.0	55.8	31.0	L	9.5	2 2.8	34.2		9.4	50.2	38.4	B
9.5	40.2	33.8		9.2	33.4	34.6	K	9.5	54 11.0	43.3		8.3	5.8	24.1	K	8.8	52.3	17.5	K
9.3	53.7	23.3		8.4	33.9	32.6	K	9.2	15.8	46.2	K	8.8	7.1	4.3		7.7	55.8	47.6	K
9.4	40 6.9	52.2		9.5	38.7	18.9		9.4	22.7	17.5		9.2	10.5	15.7		9.4	58.8	3.8	
8.6	15.5	1.0		9.5	41.2	16.4		9.5	30.8	57.0		9.1	11.6	2.2		9.5	10 2.7	54.8	
9.4	16.2	6.4		8.9	41.4	57.8	K	9.4	37.8	10.6		9.5	28.2	21.9		9.2	4.7	2.6	
8.8	18.8	15.7		9.5	55.9	45.2		9.4	43.5	8.6		8.7	35.8	5.6	K	9.3	14.6	26.0	
8.4	20.1	35.6		9.5	56.0	16.7		9.5	50.6	7.5		9.1	44.4	15.5		9.2	36.8	14.9	
9.5	46.0	18.1		8.8	58.1	0.2		6.9	55 14.1	49.8	L	9.1	47.5	10.8		9.4	48.0	1.9	
9.5	58.7	13.4		9.5	47 5.9	21.8		9.2	28.9	27.6		9.0	57.9	53.0		9.4	56.5	30.2	
8.1	41 0.3	40.6	L	9.5	7.8	58.1		9.5	31.6	34.5		9.1	3 16.7	7.8	K	9.0	11 22.8	32.3	
8.4	6.5	5.3		9.4	9.2	21.6		9.4	37.9	36.0	B	9.5	20.0	18.3		9.5	49.4	11.8	
9.5	17.1	22.6		9.4	24.1	50.7		9.5	45.9	6.3		8.0	23.4	58.0	B	9.5	12 1.3	30.1	
9.4	34.7	38.9		9.3	40.7	37.8		9.4	48.1	10.5		9.4	26.1	5.1		8.7	25.9	13.3	
7.9	35.2	29.2	B	9.5	53.0	32.4		9.5	48.5	33.0	B	9.3	31.8	46.2		9.4	27.7	37.8	
9.5	37.8	54.2		9.4	57.7	17.0		9.5	54.6	35.7		8.8	46.9	17.7		8.2	35.9	22.3	B
9.3	39.9	43.8		9.3	48 9.9	6.4		9.5	57.0	33.2	B	9.5	53.3	15.1		9.4	13 0.8	0.6	
9.0	41.5	32.2		9.5	25.0	40.5		7.0	56 9.8	42.7	L	8.0	4 20.4	48.0	K	9.2	4.0	5.4	
8.9	44.5	4.4	K	8.7	34.7	9.4		9.0	47.5	33.3		9.5	25.0	8.4		9.5	6.5	46.6	
8.2	45.7	38.6	L	7.8	36.0	19.5		9.5	57 20.7	48.3		9.3	37.5	43.2		8.8	26.1	10.3	
9.1	47.2	22.8		8.6	49 18.2	16.8	B	9.4	45.5	14.5	B	9.3	41.1	24.2	K	9.4	26.8	25.1	
9.4	59.9	16.1		7.3	21.1	18.5	L	9.4	49.3	5.0	B	9.0	45.8	16.5		9.5	27.2	32.3	
9.2	42 0.3	8.8	K	9.5	34.5	29.3		9.5	56.4	59.0		9.0	46.3	32.3		8.8	46.5	7.8	
9.5	13.4	23.5		8.9	45.9	7.8		9.4	58 1.5	23.2		9.5	56.9	53.0	B	9.5	14 18.0	26.0	
9.2	16.9	43.0		9.5	50 4.7	18.2		9.5	6.8	5.9		6.8	5 5.2	21.4	K	9.4	40.1	8.8	
9.5	20.8	5.1	B	9.0	16.4	30.2	K	9.1	6.8	47.9		9.2	10.4	28.3		9.3	50.7	41.1	
8.9	27.1	54.9		9.5	21.8	58.4		8.4	10.0	42.7		9.3	17.8	45.3		8.5	54.8	19.1	K
9.5	28.5	12.5		9.5	28.1	50.9		9.3	22.8	45.4		9.5	54.6	47.4		9.5	15 5.2	25.2	
8.5	44.5	51.1	B	9.0	40.4	59.3		9.4	24.5	23.6		8.7	58.5	56.6	K	9.5	9.2	26.2	B
9.1	46.3	28.3	K	9.3	45.6	34.8		8.4	26.9	7.9	S	9.3	59.5	38.7	B	8.9	26.8	8.3	K
9.5	48.5	5.4	B	6.5	57.1	33.5	K	7.4	27.7	50.0	B	9.5	59.8	1.5		7.6	33.2	24.3	B
7.8	58.4	28.5	K	9.2	51 2.0	24.3		9.3	39.2	5.2	B	9.2	6 0.0	42.5	K	9.3	34.7	32.6	
9.4	43 1.7	12.6		9.4	12.9	2.5		9.4	47.5	29.9		9.3	2.2	6.4		9.5	35.0	0.5	
8.3	20.6	56.0	B	9.3	17.5	54.2		8.4	51.8	19.4	B	9.5	14.9	1.3		7.4	37.9	7.9	K
9.5	25.6	5.4		9.1	21.4	41.2	B	9.5	53.3	24.7		9.4	21.5	19.3		9.4	41.8	21.0	
9.5	32.1	50.8		7.2	21.8	23.0	K	9.2	54.4	0.0	B	9.5	26.9	2.3	B	9.5	43.1	22.7	

+30°

20ᵐ

m	4001—4060 20ᵐ	+30°		m	4061—4120 20ᵐ	+30°		m	4121—4180 20ᵐ	+30°		m	4181—4240 20ᵐ	+30°		m	4241—4300 20ᵐ	+30°	
9.5	15′ 56.2	23.7		9.5	25′ 32.1	0.4		9.5	33′ 24.0	53.1		9.4	42′ 17.9	35.0		9.5	50′ 9.5	9.9	
9.5	16 6.8	55.1		9.5	43.5	24.4		8.5	29.8	38.0	K	9.5	20.0	40.0		9.0	21.8	17.8	K
8.8	20.2	47.7	K	9.5	44.2	57.1		8.1	32.7	35.8	K	9.4	21.8	52.6		9.5	31.8	17.8	
9.5	21.4	37.4		9.2	54.0	42.4		9.5	37.6	6.2		8.3	31.0	58.3	K	9.0	41.4	7.9	
6.5	47.8	47.9	K	9.5	55.3	57.8		9.3	37.8	15.9	B	7.5	37.8	15.3	L	9.3	49.5	27.6	
9.1	49.2	5.1		9.4	26 26.8	30.3		7.5	39.4	18.7	K	9.5	56.4	54.8		9.5	57.1	50.6	B
9.5	17 10.3	47.8	B	9.3	30.9	36.0		9.3	45.0	13.6		9.5	43 0.5	45.9		9.5	51 2.1	53.0	
9.2	11.7	7.9		9.5	58.5	27.1		9.0	56.8	6.2	B	9.1	3.7	53.6		9.5	4.7	34.1	
9.5	23.2	33.6		9.0	27 9.7	26.6		9.4	34 9.2	13.8		9.0	5.9	32.6		9.5	12.3	28.0	
8.4	32.6	25.8		9.5	25.0	31.3		9.1	20.4	29.9		8.7	12.8	50.9	K	9.5	27.6	8.4	
8.8	39.1	10.3		8.8	30.6	16.3	B	9.2	27.9	55.6		8.1	35.8	6.5	K	9.2	36.5	43.5	
8.7	49.6	17.7		9.5	33.0	30.1		9.5	32.4	52.3		9.3	37.4	41.1		9.4	55.4	25.7	
9.5	53.7	57.7		9.4	35.5	58.9		9.2	40.0	20.4		9.5	37.4	42.3		9.5	57.9	58.6	
9.1	18 17.5	45.7		9.5	41.7	23.8		8.3	40.9	50.8		9.5	40.6	28.3		8.0	52 2.3	45.0	L
8.0	29.0	35.1	K	9.4	49.1	39.0		9.3	41.5	27.3		9.5	44 5.9	6.6		9.0	3.1	48.0	
9.3	38.8	52.4		9.5	55.3	16.2	B	9.5	35 9.7	2.4		9.1	9.7	30.2		9.5	8.0	20.8	
9.0	47.1	29.6	B	9.3	57.1	16.9		9.5	21.9	30.5		7.7	24.8	48.9		9.5	9.2	32.9	
9.5	53.9	22.8		9.4	28 14.4	47.4		7.5	22.3	44.6	L	9.2	25.6	4.1	B	9.1	21.8	4.6	B
9.5	54.8	5.7		9.1	22.0	30.4		9.5	23.6	18.1		7.0	35.6	22.5	K	8.3	23.3	3.8	
9.2	56.8	5.0	B	9.5	28.9	32.4		9.2	39.0	49.7		9.1	37.0	10.9		9.3	26.0	25.0	
9.1	19 5.9	34.3		9.5	29.2	11.4		9.4	51.2	48.0		8.9	38.3	32.4	K	9.5	51.1	10.6	
9.0	8.7	56.3	B	9.4	37.5	33.7	B	9.4	51.5	41.0	B	9.5	39.1	39.7		7.9	53.4	54.8	K
7.8	9.5	5.6	K	9.4	40.8	20.0		9.3	53.1	43.3		9.5	53.5	55.8		9.5	53 1.9	22.7	
9.0	13.6	41.8	B	9.5	52.8	46.9		9.2	55.1	18.4	B	9.4	53.8	35.3		9.5	4.4	46.8	B
9.5	22.8	19.9		9.5	53.5	59.5	B	6.8	36 6.8	47.7	K	9.1	45 10.7	7.7		9.2	17.5	27.6	
9.5	26.7	3.5		9.0	54.4	15.7		9.0	9.6	18.8	B	9.5	20.0	37.8		9.1	33.2	5.4	
9.4	46.1	42.4		9.0	29 11.0	0.5		9.5	18.2	56.6		9.2	40.5	11.6		8.9	35.8	42.2	
9.4	47.4	14.5	B	9.5	11.0	29.9		9.0	21.0	35.3		9.5	46 1.8	10.6		9.4	41.8	13.5	B
9.4	20 4.5	46.2		9.5	12.7	23.0		9.1	24.6	31.8		9.5	11.2	0.4		9.5	44.5	14.3	
9.2	10.2	58.2		9.4	35.2	57.6		9.5	37 20.0	31.0		9.0	13.8	5.4		9.5	44.9	28.3	
9.5	11.2	17.3		9.4	39.8	49.6		9.2	25.9	40.1		9.5	14.1	47.4		9.5	47.3	52.6	B
9.3	12.2	1.6		9.1	56.6	31.1		9.3	33.1	31.0		9.4	22.7	48.4		9.5	47.8	53.5	
9.2	20.6	54.5	B	9.5	58.4	3.8		9.5	34.0	40.1		9.4	27.4	7.9		9.3	52.5	25.4	
8.8	35.7	50.1		9.5	30 5.5	35.0		9.5	51.6	54.9		9.5	30.5	26.7		9.3	58.7	30.8	
9.5	47.8	7.6	B	9.3	13.3	9.3		9.3	56.1	47.4		9.4	38.0	37.0		9.5	54 7.3	29.9	
8.7	21 16.9	50.4	K	9.5	35.6	42.4		9.5	57.8	5.7		9.5	48.3	12.8		8.5	23.6	20.3	R
9.4	20.6	45.2		8.8	40.8	17.2		9.3	38 24.0	0.7		9.4	47 2.0	56.9		9.5	26.4	43.0	
9.0	55.7	3.7	B	9.5	47.7	12.0		8.7	31.3	59.2		7.7	32.2	24.4	L	9.5	31.1	26.9	
9.5	57.7	6.0		8.9	50.0	54.2		9.2	31.7	52.1		8.5	34.3	58.0		9.5	47.3	10.6	
9.2	57.8	19.0		9.2	59.5	55.2		8.7	41.3	17.8		9.5	48.1	1.0		9.3	47.8	59.4	
9.2	58.0	32.6	B	9.5	31 11.8	2.3		9.1	54.5	29.9		9.3	48.2	30.9		9.3	55 5.6	39.7	
9.5	22 8.2	59.5		9.0	24.8	21.9		9.1	56.8	17.7		9.3	48.2	31.5		9.2	7.5	42.7	
9.1	20.5	25.0		9.4	25.8	23.6		9.0	39 4.7	22.6		9.2	56.9	13.1		9.5	14.7	27.6	B
9.5	23.0	54.7		9.5	29.6	20.1		9.5	18.4	46.6		9.5	59.6	16.0		9.5	20.7	32.8	
8.7	37.1	32.1	K	8.4	33.5	35.4		9.5	29.6	55.2		8.8	48 0.7	45.1	B	8.6	21.5	49.9	K
9.5	37.5	12.8	B	8.0	35.7	29.9	B	8.5	32.8	30.3		9.3	3.9	29.9		9.5	26.0	18.8	
8.8	42.4	49.7		9.4	52.8	45.9		4.3	40.0	11.3	K	9.3	4.8	50.6		9.3	30.4	12.8	
9.3	50.3	55.6		7.2	32 11.0	4.4	L	9.5	48.0	1.3		9.5	6.8	43.2		9.2	30.8	46.9	
9.4	50.7	58.0		8.5	14.9	37.8	K	8.5	50.5	7.8	K	9.1	10.9	31.2	B	9.0	55.7	17.8	
9.0	54.6	42.4		9.4	23.8	50.6	B	9.0	40 13.4	47.4		9.5	26.9	59.4		9.5	56 1.1	7.3	
9.3	23 21.0	54.6		9.4	28.2	47.1		9.5	50.9	20.2		9.4	30.1	12.7		9.5	2.9	55.0	
9.2	32.2	19.6		9.4	30.1	8.6		9.0	41 1.7	23.7		9.5	32.5	18.8		9.5	18.0	57.8	
9.4	41.8	36.3		9.2	31.2	48.0		8.8	21.6	31.8		9.3	33.4	48.1	B	8.0	29.8	6.9	K
9.5	59.1	47.6		9.1	37.3	54.3		9.5	23.9	57.2		9.5	49 0.8	17.8	B	8.5	41.4	54.6	
7.9	24 3.4	4.4	K	9.0	45.1	56.5		9.4	28.4	22.1	B	9.1	10.0	15.4	B	9.4	50.7	44.3	
9.5	6.8	2.7		9.5	50.0	3.2		9.4	48.1	6.0		9.5	16.3	10.6		9.4	53.1	25.3	
8.4	16.5	26.4	K	9.5	54.8	14.6		9.5	48.5	23.2		9.4	31.6	7.1		9.3	57 10.6	24.5	B
9.5	57.7	31.3		9.5	33 2.5	13.9		9.5	52.0	9.5		9.5	34.8	52.1		9.3	16.4	48.1	
9.4	25 21.6	7.3		8.3	4.5	33.6	K	9.5	52.5	24.9		8.9	35.4	12.8		7.5	35.6	29.6	K
9.3	23.8	47.1		9.5	14.8	49.9		9.4	42 2.3	27.8		9.5	57.8	35.8		9.5	36.1	7.1	

4301—4360				4361—4420				4421—4480				4481—4540				4541—4600			
	20ᵐ—21ᵐ	+30°			21ᵐ	+30°			21ᵐ	+30°			21ᵐ	+30°			21ᵐ	+30°	
m		′		m		′		m		′		m		′		m		′	
9.5	57 36.9	3.9		9.3	7 33.8	15.7		7.8	17 17.0	29.1	L	8.5	29 43.5	57.6	K	8.8	43 56.3	15.1	
8.9	43.3	54.6	K	9.0	49.6	56.5		9.5	26.2	37.1		9.2	55.0	8.3		8.5	44 9.4	11.8	
9.3	44.4	50.1		9.5	53.5	2.8		9.3	32.7	54.2		9.4	30 7.7	58.1	B	9.0	23.5	2.9	B
9.0	58 12.9	32.1		9.5	56.7	18.0		9.1	37.3	2.8	R	9.5	19.7	54.1		9.4	27.7	1.4	
9.5	24.8	41.0		7.8	8 1.5	22.4	K	9.3	54.0	41.3		9.5	22.6	19.2		9.3	41.8	14.7	
9.0	34.3	37.8		8.2	11.0	2.1		9.3	55.2	35.2		9.0	22.9	47.4		9.0	45.1	59.2	
8.3	35.4	20.8		9.2	24.6	12.3		9.5	18 3.8	59.9		9.5	31.2	2.5		9.4	56.8	11.7	
9.5	40.5	55.5		9.0	30.6	37.0		6.7	10.3	18.5	K	9.4	40.8	58.2		9.5	45 16.2	54.7	
9.5	44.9	30.4		9.5	59.1	7.8		9.5	12.6	8.2	B	9.3	31 14.4	25.3		9.5	46 31.3	42.9	
9.5	52.3	3.5		9.5	9 12.8	14.7		8.8	40.2	34.7		9.5	32 4.8	3.8		8.9	36.3	17.0	
9.4	59 12.7	32.6		9.5	20.0	37.3		8.4	56.6	51.0	K	8.4	21.3	20.4	K	8.6	37.2	6.8	R
9.4	20.5	39.7		9.4	28.8	52.5	B	9.4	19 6.3	3.0		8.8	21.9	33.3		9.4	47 19.5	7.7	
8.4	39.5	59.5	K	8.8	51.3	30.3		9.5	15.1	50.4		9.2	38.8	37.7		9.5	55.3	0.6	
8.5	39.8	13.1		9.5	57.4	13.6		8.5	31.2	2.8		9.2	53.2	36.2		8.0	48 9.0	55.2	
9.4	53.6	0.8	B	9.5	59.7	27.1		9.5	20 1.9	7.3		8.7	56.9	7.4		9.5	12.4	2.8	
8.6	57.2	33.9	B	8.9	10 2.8	40.8		9.0	4.3	55.0		8.1	33 6.5	52.7		8.2	30.9	57.0	
9.4	0 4.9	36.4	B	9.5	4.8	33.7		9.1	13.5	15.3		9.2	18.2	7.8		8.8	54.1	27.1	
5.6	25.8	36.3	K	9.5	8.2	56.3		9.0	28.8	12.4		8.4	28.3	28.9	K	7.8	59.5	8.5	K
9.5	31.6	49.3		8.0	11.6	46.0	K	9.2	42.2	0.1	R	8.7	51.4	47.8		9.3	49 26.2	59.1	B
9.2	34.8	7.4		9.5	20.2	24.9		9.5	43.8	33.6		9.4	34 32.2	38.6		7.7	26.6	35.1	K
9.5	53.8	42.5		9.5	41.3	39.2		9.5	52.1	19.1	B	8.9	36.8	44.4		9.2	35.9	18.8	B
7.0	1 2.3	0.8	K	9.5	41.6	26.2		9.2	54.2	39.2	B	8.3	47.9	55.0	K	9.0	50 7.2	11.2	
9.0	4.8	17.8		9.5	48.1	40.7		9.5	21 0.8	19.2	B	9.5	35 6.9	42.5		9.4	10.8	47.4	
9.2	15.8	33.1		9.4	55.4	52.3		9.5	15.1	46.3		9.2	23.7	52.5	B	9.3	18.2	27.9	B
8.6	16.3	57.6	K	9.5	57.5	38.4		9.5	30.6	35.2		9.5	25.2	48.2		9.5	45.3	22.7	
9.2	17.9	32.9		8.0	11 2.5	5.7		8.4	43.8	43.9	K	9.2	45.3	39.5	B	9.2	49.1	58.1	
9.0	21.1	4 9	K	9.5	17.3	23.5		9.5	22 22.9	26.6		9.0	57.1	51.2		9.5	51 1.3	35.3	
9.0	22.9	27.4		9.2	22.7	37.2		9.5	34.7	6.7		9.5	36 1.3	21.7		9.0	5.4	29.1	
9.3	25.3	30.0		8.0	25.4	33.0		9.0	39.3	22.4		8.7	6.3	50.1	B	9.1	24.8	48.8	
9.2	32.2	5.5		9.2	30.3	20.5		9.1	56.1	51.8		8.3	16.9	39.1	K	9.4	31.5	24.3	
9.1	34.6	10.5		9.4	43.5	51.9		8.5	23 2.8	9.8	K	9.5	25.8	14.3		9.1	50.3	6.8	
9.0	2 0.4	52.2		9.5	45.8	26.9		8.5	22.2	6.0	K	9.2	28.8	4.0		9.4	51.7	47.5	
9.2	2.3	50.7		7.8	51.0	12.4	K	9.3	36.0	51.4		9.5	45.4	15.3		8.6	52 1.5	55.3	
9.3	38.3	35.6		9.2	51.3	44.1		9.5	49.1	22.8		9.5	37 51.0	41.8		8.8	20.4	7.8	
9.4	43.6	27.0		9.5	57.2	22.3		8.0	52.5	11.2	K	8.7	38 2.8	50.7	K	9.2	20.7	25.6	B
8.3	3 12.6	55.6		9.0	13 22.0	21.1		9.3	24 1.4	51.1		9.3	9.1	46.6		9.5	26.8	1.2	
9.5	29.4	51.3		9.5	26.0	4.3		9.5	9.7	54.9		9.4	11.9	16.0	B	9.5	27.1	51.5	
9.5	45.3	27.0		8.8	34.8	34.0		9.5	11.6	19.3		9.3	34.3	42.9		9.5	41.5	20.1	
9.5	51.3	33.1		9.5	14 2.0	33.0		9.5	13.7	36.0		9.1	39 9.5	56.8		9.4	42.6	41.3	
9.0	4 19.4	30.5		9.5	2.4	16.7	B	9.0	16.5	2.2		9.1	33.5	16.9		9.3	53 20.4	37.5	
9.0	51.5	43.8		9.3	8.4	16.8	B	9.5	29.6	26.1		8.3	40 4.1	47.2		9.5	20.6	16.5	
9.0	5 7.9	18.4		9.3	18.1	36.8		9.3	29.7	31.1		9.3	8.4	33.3		9.4	47.9	13.8	B
9.3	17.6	28.9	B	9.5	27.5	20.2		9.4	50.2	11.8		8.9	34.3	3.2	B	9.4	54 8.0	4.2	
9.5	18.7	8.0		9.3	41.5	44.0	B	9.5	55.9	46.2		9.3	41 3.1	16.3		7.2	21.0	44.0	K
9.1	24 4	44.5		9.5	53.0	55.9		9.5	25 17.8	20.1		8.7	13.2	38.9		9.4	22.2	33.0	
9.2	34.4	25.4		9.5	59.6	16.8		9.3	31.1	33.0	B	9.5	19.9	9.9	B	7.0	28.3	50.5	K
9.5	34.4	7.6	B	9.1	15 20.7	15.0		8.9	37.9	33.1	B	8.1	19.9	51.7	K	8.3	30.5	2.5	K
9.4	38.0	29.5		9.0	28.5	47.9		9.5	43.9	47.9		9.5	20.8	2.0		9.3	55 50.8	39.1	
9.0	39.3	22.8		9.4	33.0	44.1		8.8	59.3	55.6		9.5	31.3	36.0		9.4	54.3	43.2	
9.5	42.0	33.4		8.4	33.4	10.7	K	9.1	27 1.8	18.9		9.3	42.6	41.9		9.5	58.3	52.9	
7.0	48.3	1.3	K	9.2	56.3	18.6		9.5	22.9	33.8		9.5	50.8	36.0		7.7	56 21.0	4.5	K
8.2	6 13.8	18.9	K	9.1	56.5	49.9		8.8	28 27.2	2.7		9.1	42 4.8	47.9	B	9.4	23.8	43.0	
9.4	29.4	46.2		9.2	16 9.4	50.8		9.5	29.8	7.8		9.3	7.2	57.4		9.1	26.3	27.1	
9.1	33.5	49.7		9.4	21.0	59.0		8.7	31.6	15.6	K	9.0	15.0	26.0		8.2	52.3	17.1	K
9.5	41.5	26.6		8.8	28.6	4.4	K	9.5	42.1	22.2		9.3	23.8	5.7		9.3	57 16.5	58.4	
7.5	48.7	12.3	K	9.5	29.2	35.8		9.0	29 4.9	11.4		9.2	50.1	47.3		9.5	27.3	56.7	
9.5	49.3	2.0		9.2	35.7	3.8	R	9.3	5.8	24.4		9.0	43 1.5	4.8	K	8.2	30.2	10.9	K
9.2	58.3	50.4		9.3	35.8	7.7		9.2	28.6	25.0		9.2	2.5	5.2	K	9.4	42.7	49.3	B
9.5	7 14.8	40.0		9.1	17 8.8	16.6		8.0	29.2	21.4	K	9.1	11.3	17.9		9.4	50.3	19.0	B
8.9	29.9	20.5	K	9.0	11.5	36.8		8.3	37.5	33.6		9.5	56.2	1.5		9.3	55.3	55.6	

4601—4660					4661—4720					4721—4780					4781—4840					4841—4900				
	21ᵘ—22ᵘ		+30°			22ᵘ		+30°			22ᵘ		+30°			22ᵘ		+30°			22ᵘ—23ᵘ		+30°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.2	57	58.7	25.7		9.5	9	0.8	45.7		9.5	22	21.1	30.1		9.4	36	39.5	33.8		9.5	48	28.9	43.5	
9.3		59.5	19.0	B	7.8		16.1	35.4	K	8.2		40.5	57.8		8.7		40.5	28.5		8.7		40.2	46.9	K
9.1	58	6.3	8.4		8.7		19.9	42.0	K	9.1	23	4.4	3.9		9.3		42.2	42.8	B	9.5		41.1	53.9	
8.8		21.0	4.6	B	9.4		25.0	17.3		9.3		10.7	57.6		8.7		42.3	53.9		9.5		54.3	57.2	
9.5		55.6	5.6		9.2		52.5	52.3		9.5		14.0	1.0		8.6		45.4	27.9		9.5	49	16.6	33.5	
9.5	59	1.8	57.4		9.5	10	23.8	12.0		7.0		29.5	28.2	K	9.5	37	10.3	47.6		8.9		48.5	4.0	
9.5		21.0	18.3		9.5		43.3	15.0		9.5		50.8	4.5		9.1		14.0	1.5		9.5	50	4.1	19.4	
9.4		25.1	10.2	B	8.5	11	3.5	39.8	K	9.5	24	59.1	0.5		8.8		38.7	44.1		8.6		23.6	45.1	
9.3		41.2	54.3	B	8.8		4.7	5.7		8.8	25	16.3	4.3	B	9.4		50.8	46.3		9.5		38.6	17.3	
9.5		44.1	48.4		8.5		12.1	31.6		9.3		27.8	22.8		9.0		58.5	35.5		9.5	51	24.9	40.1	
9.4		45.0	54.4	B	8.6		16.0	45.7	K	9.5		29.3	52.2		9.5	38	12.8	37.2		9.5		48.0	59.2	
8.5		45.0	25.6	K	9.1		16.3	50.6		7.8	26	27.2	39.9	K	9.4		15.1	49.8		9.5	52	9.8	40.1	
9.5		54.0	59.7		9.1		24.2	47.6	K	7.5		52.5	32.4	K	9.4		41.8	12.4		9.5		20.6	55.2	
8.0	0	2.8	13.3	L	9.5		45.1	48.8		9.3		58.1	3.7		9.5		45.3	1.1		9.5		49.2	4.2	
9.4	1	40.0	46.7		9.3	12	1.4	20.3		8.5		58.8	49.2		9.2		49.7	6.4	B	9.3		55.8	28.3	
9.5	2	26.5	12.6		9.5		14.6	20.3		9.3	27	4.6	5.0		9.5	39	12.8	49.7		9.2	53	9.6	17.0	
9.1		40.2	9.6		9.5	13	2.9	57.6		8.8		7.3	51.7		9.0		26.5	8.2		9.2		24.9	57.7	
9.4	3	3.8	47.4		9.5		4.0	4.5		9.5		18.7	16.8		9.5		31.9	59.4		9.5		37.5	32.8	
9.0		6.2	57.1		9.2		6.5	22.8	K	8.8		27.4	30.6		9.2		37.4	49.0		6.0		48.2	18.7	K
9.5		15.8	49.5		9.5		13.6	6.0	B	9.3		44.6	48.1		8.4		39.5	23.8		9.2	54	7.9	6.1	
9.2		49.8	43.6		8.7		27.5	25.2	K	8.8	28	0.4	46.9		8.2		48.5	33.2		9.5		35.6	16.3	
8.9		55.4	56.8		8.9		29.3	41.3		9.0		0.4	57.5		9.0	40	19.4	50.7		9.5		54.4	59.1	
8.2		58.9	6.2	K	9.4		52.5	15.1		8.5		9.1	43.4	L	7.9		31.6	16.6		9.5	55	10.3	41.1	
9.5	4	9.8	15.5		9.5	14	24.2	5.7		7.0		20.1	3.0	L	8.9		42.5	32.8		9.0		41.6	10.3	
9.5		26.3	48.1		7.0		27.0	34.8	K	9.2		29.2	12.1		9.5		57.2	35.2		8.4		59.8	48.8	K
9.4		46.3	37.5		9.4		28.3	14.8		9.0		30.0	9.4		9.3	41	2.4	7.7		7.1	56	23.8	53.1	K
9.5		50.6	49.2		9.4		49.7	46.6		9.1		37.3	7.7		9.3		6.2	38.6		8.0		42.9	18.0	
9.5	5	2.8	44.8		9.5		52.5	34.8		9.5		40.8	0.6		8.4		31.3	51.0		9.0	57	26.5	8.6	
9.4		3.7	44.0	B	9.5		52.9	16.5		9.5	29	1.4	43.2		7.8		39.6	19.8	K	6.5		41.0	31.4	K
9.5		9.1	45.5		9.5		58.2	51.0		9.4		23.1	32.1		9.5		45.7	33.5		9.5	58	6.5	5.9	
9.2		13.3	3.0		9.3		59.7	49.0	B	9.2		59.6	0.8	B	9.2		52.5	0.6		9.5		18.1	17.2	
9.4		27.5	4.7		9.5	15	14.3	24.6		7.1	30	2.0	2.5	K	9.5	42	12.6	47.3		9.3		29.8	17.9	
9.5		37.5	51.9		9.5		19.5	43.7		8.2		3.7	38.0		9.5		15.8	4.3		9.3	59	1.7	47.0	
9.5		38.5	53.1		9.4		56.6	34.1		9.1		10.0	7.1		9.5		17.7	58.8		9.5		24.8	21.8	
9.2		42.4	4.9	K	7.5	16	2.5	0.9	K	9.5	31	6.6	18.3		8.5		29.5	2.7		8.2		36.5	13.8	B
9.5		57.9	38.7		9.5		17.8	44.4		9.3		13.3	27.9		7.5		53.6	32.5	K	9.0		39.8	18.0	
9.3	6	16.8	34.7	B	9.5		17.9	12.8		9.5		39.4	45.2		9.5	43	35.5	11.8		9.2		47.6	8.3	
9.4		19.3	27.4		8.0		43.5	46.6		9.5	32	9.2	48.7		8.9		40.6	45.2	K	9.1	0	44.5	44.3	B
9.5		21.5	49.1		9.5		49.9	5.1		8.5		22.5	23.5		9.5	44	11.4	8.8		9.5		45.3	21.8	
9.3		22.2	4.9		9.5		52.6	2.1		9.5		56.8	9.9		9.2		29.1	6.5		8.8		54.9	7.9	
9.0		23.4	12.0		9.4	17	5.7	45.5		7.0		58.1	23.5	K	9.5		50.2	3.5		7.0		58.7	39.8	K
9.4		26.8	33.9		9.5		7.5	23.0		8.6	33	5.0	0.5		8.8		52.6	14.1	B	9.5	1	10.0	6.3	
9.5		28.4	55.9		6.6		19.5	31.6	R	8.7		9.3	45.0		9.4	45	5.1	22.2		9.0		18.8	46.3	
8.7		30.6	14.8	K	9.3	18	37.2	40.6		9.5		19.2	42.5		9.3		13.7	58.6	K	9.5		24.9	50.1	
9.5		36.9	50.0	B	9.5		41.4	8.2		8.4		25.5	2.3		9.3		15.4	4.4		9.0		44.6	4.4	
9.5		37.5	48.1		9.3		59.8	3.3		9.5		38.4	7.4		9.5		18.3	54.7		9.5		45.8	13.9	
8.8		41.4	6.7		9.3	19	7.7	26.5		8.2		44.5	33.8	K	9.5		26.6	34.2		9.3		50.3	44.6	
9.3		43.3	49.9	B	9.3		20.9	33.2		9.3		55.9	47.4		8.8	46	9.9	53.5		9.5	2	2.8	47.3	
9.5		44.2	56.6		9.3		38.1	9.9		9.2	34	6.3	13.0		9.4		16.8	7.0		9.0		14.9	42.7	B
7.8		49.9	39.8	K	8.3		51.2	12.6	K	9.2		27.6	12.8		9.5		32.5	3.1		9.4		35.0	51.4	B
8.2	7	3.0	55.4	K	6.7	20	22.6	13.3	K	6.3		45.5	12.5	L	9.4		35.4	9.3		9.5		45.1	54.9	
8.7		32.7	40.8	K	9.0		38.5	11.9		9.5		57.3	1.1		9.5		35.5	0.4		9.4	3	3.7	52.9	
9.5		52.9	25.3		9.0	21	0.0	56.1		9.0	35	2.7	6.1		9.2	47	39.6	48.5		9.5		29.2	40.8	
9.5		53.1	42.5		9.5		6.3	39.1		8.7		21.8	57.4	K	9.4		44.2	49.6		9.0		33.3	23.2	K
8.9	8	0.5	3.5	K	9.5		44.5	3.3		9.2		29.3	34.3		6.6		53.5	42.5	B	9.5		37.8	6.5	
9.4		2.1	38.3		9.5		47.0	47.1		9.5		35.1	10.6		8.0		54.5	16.4	K	7.5		59.3	21.8	K
8.1		3.8	49.9	K	9.2		47.2	40.1		9.4	36	11.8	17.5		9.0	48	15.0	5.4	B	9.5	4	11.2	25.2	
9.2		18.7	31.4		9.0		54.3	38.1		9.5		21.7	49.4		9.3		17.4	54.0		9.2	5	7.0	46.4	B
9.5		32.6	23.0		8.8	22	9.4	55.6		9.5		28.2	7.9		9.5		22.5	3.4		9.1		7.2	58.7	K
8.6		46.6	15.1		9.4		20.3	26.6	B	9.5		35.1	8.2		9.5		22.6	48.5		9.5		29.5	14.2	

4901—4939				4940—4977				4978—5015				5016—5053				5054—5091			
	23ᵘ	+30°			23ᵘ	+30°			23ᵘ	+30°			23ᵘ	+30°			23ᵘ	+30°	
m				m				m				m				m			
9.4	5′ 52.3	51.8		9.2	18′ 40.2	10.1	B	5.0	26′ 48.0	31.7	K	8.0	38′ 11.8	55.2	L	9.5	49′ 2.5	35.4	
9.4	56.8	9.7	B	9.5	46.3	54.3		9.3	27 5.7	18.6		9.1	17.9	32.3		9.4	14.7	3.5	
9.3	6 3.9	28.4		9.4	48.2	0.2		9.3	50.2	31.9		9.5	41.4	38.8		8.9	24.0	36.7	K
9.5	12.3	1.5		9.5	19 4.0	39.5		9.5	56.4	52.3		9.5	55.0	10.1		9.5	55.3	28.1	
9.3	54.8	35.6		9.5	15.4	6.8		7.5	28 13.0	12.1	K	9.4	39 32.1	57.1		9.5	50 19.4	20.4	
8.3	7 6.7	30.8		7.7	24.7	57.5	K	7.9	15.9	23.0	K	8.8	39.6	23.1		9.0	23.9	12.6	
8.5	21.8	59.8	K	9.5	20 15.1	6.2		9.5	49.5	26.5		8.5	57.6	39 8	K	9.3	29.7	49.7	
9.5	42.7	3.4		9.5	21.3	55.4		9.5	57.6	45.0		9.5	40 16.0	8.9		8.5	43.0	21.0	B
8.5	8 3.5	15.3	B	8.8	35.9	32.6		9.5	29 24.5	46.8		9.3	31.2	12.6	B	9.1	43.4	57.5	B
9.5	12.6	59.1		9.5	52.6	14.4		9.3	31.4	36.9		8.8	31.5	27.6		9.5	52.1	13.4	
9.5	25.8	13.6		8.9	58.8	6.2	K	9.5	47.0	44.5		9.3	33.3	48.5		9.5	52.2	21.3	
7.3	39.8	53.1	K	9.5	21 16.4	57.1		9.5	54.0	18.3		9.5	41 7.4	12.3		8.5	51 19.0	50.9	
8.5	9 40.7	31.8		9.2	22.5	51.9		9.5	30 36.4	16.0		7.7	32.6	54.5	K	8.1	22.5	0.8	L
9.3	51.1	8.8		9.5	23.6	39.5		9.2	36.4	54.8	B	9.4	38.7	29.2		9.2	54.7	5.0	
9.4	10 3.2	33.6		9.5	38.1	55.9		9.5	31 9.5	58.6		9.0	52.5	35.8		9.5	52 17.1	36.0	
9.2	10.9	51.7		9.5	43.8	36.2		9.5	25.3	0.6		9.4	58.8	49.6		8.4	37.1	43.5	B
8.4	11.0	56.0	B	9.5	48.5	36.7		9.5	29.0	51.4		9.5	42 6.9	7.8		9.5	37.6	54.9	B
7.5	38.9	14.3	B	8.1	22 1.6	54.2	L	9.5	48.1	57.1		8.8	37.6	15.1		7.5	53 3.8	25.8	K
9.5	43.4	1.8		9.5	1.0	37.7	B	8.8	55.7	4.1	K	9.0	38.7	32.4		9.0	6.4	57.0	
9.2	55.5	27.3	B	8.3	37.9	54.9	K	9.5	32 7.9	54.6		9.0	43 1.0	2.9		9.5	15.8	0.6	
9.4	11 10.5	31.3		9.5	46.4	19.3		9.1	21.7	42.4		9.5	27.9	46.8		9.4	45.9	40.6	
9.4	12 20.5	25.5		8.4	23 1.6	54.7	K	9.4	27.2	56.9		8.3	35.7	48.2	K	9.2	59.0	2.2	B
9.5	27.0	6.9		8.0	6.0	33.9	K	8.8	31.4	18.8		8.4	48.3	59.0	K	9.5	59.5	1.4	
9.5	13 12.9	13.1		7.6	17.4	2.6	S	9.5	33 26.4	19.2		9.5	58.6	15.1		9.0	54 5.0	57.6	K
9.5	25.3	31.1		9.5	57.3	56.7		8.6	34 15.9	39.5	K	9.5	44 10.2	53.9		9.3	30.0	5.7	B
9.0	52.0	22.8		9.5	24 9.5	41.9		9.5	24.6	58.3		9.5	22.5	5.5		9.5	41.1	8.8	
9.5	14 0.2	41.0	B	9.3	9.8	2.2	K	9.5	39.5	45.0		9.5	45 21.4	54.3		9.5	42.2	11.5	
9.5	15 35.4	47.1		9.4	13.8	42.9	B	9.4	35 0.7	23.6		9.4	46 30.0	0.2		9.5	46.9	54.4	
9.5	57.9	31.2		9.5	40.4	16.5		8.7	11.3	10.3	K	8.5	38.9	22.6	K	9.5	55 55.3	52.9	
9.4	16 5.4	26.8		8.9	46.0	25.7		9.5	44.4	28.6		9.5	47 18.4	18.9		9.5	56 3.5	38.5	
9.4	10.2	3.9	B	9.5	56.9	15.8		9.4	52.0	12.6		9.3	21.5	3.0		9.5	38.9	28.1	
9.4	16.3	35.4		8.3	25 20.7	38.8	K	9.5	36 14.5	27.5		8.7	24.9	31.9	K	9.1	49.7	48.1	
9.4	18.4	54.0		9.3	24.0	59.7		9.1	25.7	41.6		9.5	53.1	33.3		9.5	57 5.8	5.0	
9.4	17 22.0	6.1		9.0	59.4	4.3		9.5	53.3	40.6		9.5	54.4	19.2		9.5	11.4	51.9	
9.0	29.1	2.5	K	9.5	26 9.1	58.7		9.3	37 46.9	49.4		9.5	48 12.9	12.6		9.5	13.9	44.7	
9.1	45.5	5.0		9.2	11.8	37.8		8.8	52.0	42.9		9.1	13.8	44.7		9.4	58 47.6	48.0	B
9.5	18 1.9	22.8		9.2	18.5	30.0	K	9.0	55.2	53.3	K	9.5	18.3	27.8		8.0	59 23.4	19.2	K
9.5	8.3	55.5		8.2	31.2	13.3	L	9.0	57.8	3.9		7.0	42.4	15.8	K	9.0	32.7	8.3	
9.3	22.8	15.8																	

Zone +31°

1—40				41—80				81—120				121—160				161—200			
	0h		+31°		0h		+31°		0h		+31°		0h		+31°		0h—1h		+31°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.0	0	4.5	11.4	K	9.5	13	22.4	21.5	9.5	29	8.3	56.0	9.5	41	33.6	54.3	9.2	52	45.8	44.0	
9.3	1	9.8	39.5		9.5		23.3	0.7	9.3		19.5	22.4	8.2	42	2.7	24.8	K	9.5	55.4	8.8	B
8.8		43.7	40.0		9.5		52.4	5.5	9.5		19.6	54.5	9.5		24.5	33.1		9.5	58.8	20.3	B
9.5	2	5.0	45.6		9.5	14	7.5	30.4	9.5		48.7	42.0	9.5		28.9	2.4		8.5	53 35.5	1.6	K
9.1		11.4	34.6		9.5	15	1.5	23.8	9.5		55.1	16.6	8.9		29.0	16.2	L	9.5	54 6.0	44.0	
9.2		51.0	24.0	K	9.5		29.9	22.8	8.5	30	14.5	24.5	L	9.5		58.7	28.0		9.5	18.3	50.6	
9.5	3	15.7	35.9		9.1		47.2	1.4	K	9.1		21.0	46.8	8.9	43	0.0	15.8	L	8.9	19.4	22.6	K
8.0		17.4	25.5	K	9.3		55.5	24.0		8.3		55.9	7.0	K	9.1		8.9	6.9		5.5	54.0	2.1	K
8.2		19.9	51.9	K	9.5	17	27.6	10.8		8.5	31	45.4	50.3	K	7.1		35.3	52.2	B	9.4	55 4.6	0.5	
9.5	4	32.7	19.0		8.9		41.0	42.5	K	9.3		48.9	12.7		8.0	44	1.0	13.1	K	9.4	44.8	56.1	
9.1		36.4	48.4		9.4		59.1	7.8		9.5	32	39.5	14.9		8.0		4.5	34.2	L	9.5	56 30.9	4.6	
8.4		59.3	23.2	K	8.3	18	39.4	27.0	K	9.5		47.4	4.4		8.8		11.2	6.7	K	9.5	54.9	47.2	
8.2	6	14.6	45.2	K	9.5		41.5	9.9		9.5		48.8	53.3		9.3		35.6	11.3		9.5	57 10.2	53.8	B
9.5		14.7	53.5		9.4	19	7.3	58.4		9.5	33	0.6	48.2		9.5	45	11.7	27.2		9.1	19.7	10.3	K
9.4		22.2	56.3		9.5		21.6	53.9		9.3		44.7	3.2		9.1		58.4	23.1		9.5	22.8	17.1	
9.0		54.4	52.8	K	9.5		44.8	51.6		9.3		45.6	54.8	K	9.1	46	18.6	38.9		9.5	25.6	35.4	
9.1	7	4.8	14.2	K	9.0	20	1.4	4.3		9.5	34	4.2	10.4		8.8		28.2	9.7		9.4	26.2	25.0	
9.5		9.7	2.0	B	9.4		13.2	56.9	B	9.5		16.0	28.9		9.5	47	4.1	56.8		9.5	56.1	43.1	B
9.3		9.8	37.6		6.7		50.5	38.2	L	9.5		16.7	5.2		9.1		16.4	30.3	K	9.0	58 4.8	28.9	K
9.2	8	1.7	47.5		9.3	21	1.9	0.1		9.5		17.0	43.7		9.4		37.7	16.9		7.2	14.8	24.1	K
9.5		2.0	54.5		9.2		13.6	4.4		8 1		18.3	48.9	K	8.9	48	5.2	2.8		9.0	18.5	3.7	K
9.5		20.0	43.5		9.4		38.0	2.5		8.7		24.4	18.8	B	9.5		6.3	22.3		9.5	23.1	36.7	
9.5		45.3	6.8		9.5		40.0	52.6		9.4		35.9	43.9	B	7.8		8.6	32.7	L	9.2	26.9	18.1	B
9.3	9	17.7	38.9		9.5	22	29.7	0.7		8.8		52.7	2.0	L	7.9	49	6.9	5.6	K	9.4	59 41.1	23.7	
9.5		42.3	31.1		9.5		47.0	44.4		9.5	35	21.9	1.8		9.5		33.7	45.9		6.9	0 2.1	15.4	K
9.5		49.6	40.3		7.9		50.8	23.4	L	9.0		51.2	10.0	K	9.2		41.2	2.3	K	9.0	20.4	7.0	B
9.5	10	35.3	55.2		7.8	23	0.0	19.6	K	9.5	36	47.5	17.5		9.1		47.5	25.1		9.2	22.7	12.7	K
9.5	11	14.3	25.9		9.5		6.1	50.9		9.3	37	33.5	25.8		8.7	50	18.7	12.8	K	9.3	1 17.2	56.9	
9.4		30.7	34.6	B	8.5		29.3	54.8		9.3		41.0	17.6		9.0		52.8	54.0	K	9.2	2 22.5	57.2	
9.5		30.7	5.8		9.4	24	19.0	0.3		9.5		45.5	48.2		6.8	51	13.7	41.5	K	9.3	25.3	50.1	
9.5		47.2	32.6		9.5		55.9	44.4		9.0	38	28.0	32.3		9.4		15.3	11.7		9.1	48.9	2.4	K
9.5		56.0	47.0		9.1	26	7.2	0.1	K	9.1		31.2	54.8		9.5		37.4	33.9		8.2	3 7.2	46.3	K
9.5		56.9	10.7		9.4		13.6	34.6		9.3		53.5	10.3		7.3		37.8	43.6	K	9.5	19.8	14.5	
9.5	12	5.7	32.8		8.9		26.2	34.8	B	9.0		55.1	42.7		9.2		38.4	34.7	B	9.2	49.7	57.8	K
9.4		8.4	56.7		9.4	27	4.6	54.7		9.1	39	10.5	15.5	K	8.5		38.6	58.8		9.5	58.2	8.9	
9.3		13.5	27.9		9.5		54.8	47.6	B	9.5		14.0	56.7		9.4		51.1	41.8		8.2	4 30.7	28.1	K
9.5		14.8	3.2		9.1		57.5	29.3		9.3		22.6	21.0		9.0		54.4	13.7	K	7.3	53.2	17.5	S
9.1		56.2	42.8	K	8.8	28	0.6	25.9		9.5		46.6	34.0		7.7	52	4.9	4.6	K	9.0	5 3.8	28.2	
9.5	13	3.5	16.2		9.4		2.6	54.2		9.5		58.1	51.6		8.5		21.0	31.9	K	9.4	13.0	51.9	
9.5		4.9	23.1		9.1		25.7	52.3	K	9.5	40	54.5	13.8		9.5		23.7	19.5		8.8	37.2	38.0	K

201—260				261—320				321—380				381—440				441—500			
	1ª		+31°		1ª		+31°		1ª—2ª		+31°		2ª		+31°		2ª		+31°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.5	5	49.7	2.3		21	56.8	16.4		41	42.9	4.9	K	3	37.5	5.1		22	9.8	7.5	
9.4		50.7	9.4		22	18.0	26.9	K		54.2	57.1		4	0.4	28.6	K		51.0	28.6	
9.5	6	3.8	42.2			46.8	39.6		42	29.1	54.6			12.8	25.0		23	23.9	22.4	K
9.5		22.0	48.8			50.4	35.8	B	43	14.1	51.5			48.1	43.5			40.1	27.5	K
9.4		28.1	29.5		23	5.8	45.9			53.2	29.9			52.7	3.1	K		55.1	9.9	B
9.5		29.5	24.7			8.1	52.9		44	9.0	51.6		5	7.9	13.7	K	24	12.2	7.2	B
9.0		39.1	14.6	K		53.3	27.7			40.2	29.4			36.9	50.0			26.9	4.6	
9.4	7	6.3	32.0		24	3.0	48.8	K		41.2	23.3	B	6	3.3	8.4			37.4	17.1	B
9.5		8.0	27.1			8.9	9.6		45	10.8	13.7	K		53.0	27.6			45.6	10.6	
9.5		43.1	46.8			45.8	29.6			12.5	29.5		8	51.0	16.5		25	5.8	51.8	
9.5		47.2	33.7		25	34.4	27.8			13.8	16.8	K	9	36.1	58.3			16.4	27.2	
9.5		49.5	3.1			55.8	58.0			37.4	50.6			39.2	4.3	K		27.1	48 7	L
9.1	8	1.9	33.3			56.5	28.1			57.2	10.9			50.0	20.7			50.5	42.8	
9.4		29.8	31.7		26	19 2	13.0		46	16.6	8.1	K		52.4	54.5		26	24.7	23.1	
9.5		31.4	36.7			24.1	31.8			33.7	34.3		10	5.0	26.9			25.4	1.1	B
9.5		53.2	50.0		27	14.0	10.4			57.4	15.0			17.8	37.2			29.7	27.9	
9.1		56.6	44.4			28.7	29.9		47	8.6	44.1			48.9	10.3	K		36.7	3.5	
9.3	9	23.7	24.9	B	8.5	29.9	1.4			19.2	40.6	B		53.6	47.3			55.0	20.3	
9.2		28.3	10.9		9.5	34.7	53.5			23.0	43.1	K	11	4.5	22.3		27	48.4	40.7	
9.5		48.8	20.1		9.0	28	17.6	26.4	L	48.5	48.1			6.6	19.6		28	26.2	58.2	B
9.3		49.7	4.4	K	9.3		28.2	56.7	B	48	48.8	46.0		9.4	26.8		30	36.5	24.2	
9.3	10	21.5	5.8		9.4		29.3	52.5		49	9.7	19.8		23.4	51.1		31	44.9	54.5	
9.5		25.8	41.2		9.5		56.0	48.1	B	9.5	18.3	59.2		30.7	38.9	K		45.7	40.7	K
9.5		33.8	24.5		9.5	29	30.5	4.0		9.1	19.0	36.0		52.5	28.3		32	8.9	22.0	
9.0	11	8.7	45.3	K	9.5		46.1	31.2		9.5	34.9	58.5		29.0	22.7			9.2	13.1	
8.3		31.9	33.6		9.1	30	30.2	49.8		9.0	50	4.4	14.1	K	8.9	13	6.4	21.7	K	9.2	33	31.0	47.1	K
9.5	12	4.7	3.3		9.5		31.9	59.4		9.5		29.3	2.1		9.4		7.7	54.0	B	9.4		54.9	13.5	
9.3		9.6	58.2		9.1		45.1	21.6		9.5		32.1	5.9		9.5		26.9	45.8		9.1	34	2.7	31.1	
9.2		14.8	46.5		9.2	31	15.0	31.4		9.5	51	44.4	18.4		9.5		52.0	40.7		8.7		45.4	9.5	K
9.4	13	0.2	1.8		9.5		43.8	16.8		8.3		53.1	11.2	K	9.1	14	29.5	29.0		9.1	35	0.9	16.5	
9.3		20.5	57.3	K	9.0	32	0.8	40.8	K	9.4	52	5.3	30.0		9.0		32.6	49.4	K	8.9		14.9	38.0	K
8.4		38.4	53.0	K	9.5		39.9	20.2		8.7		47.0	5.0	K	9.5	15	19.0	23.8		7.5		19.7	45.2	K
9.4		45.7	21.3		9.2	33	17.3	56.6	K	9.4	53	4.7	19.8		9.5		46.7	11.1	B	9.5		42.0	54.6	
9.3	14	30.6	27.9		9.4		40.8	32.6		8.0		22.5	25.3	K	8.5	16	6.9	59.9	K	9.0		52.4	23.9	
9.5		46.5	20.1	B	8.0		43.8	17.8	K	9.4		41.2	55.1		9.5		13.0	27.0		9.5	36	5.9	14.5	
7.6		51.3	5.0	L	9.2	34	13.5	28.8	K	9.5	54	24.9	15.3		8.8		31.0	44.5		9.5		56.5	19.0	
9.4	15	5.7	1.1		8.1		14.4	55.3	K	8.6		52.9	42.6	L	9.5		47.6	25.5	B	8.4	37	37.4	23.1	L
9.0		21.6	1.6	B	8.3	35	5.3	51.8	K	9.3	55	4.1	13.3		7.3		52.9	45.1	K	9.5		41.0	30.4	
9.0		45.8	16.4		9.4		25.9	8.2	B	8.3		12.0	11.6		8.4		57.7	26.8	K	9.4	38	13.6	30.0	B
9.4	16	7.4	53.9		9.1		35.5	41.2		9.4		22.2	26.0		9.4	17	13.7	5.2		9.4		16.3	54.4	
9.0		12.3	9.0	K	6.5		35.7	29.2	K	9.2		37.6	18.6		8.2		36.1	12.7	K	9.1	39	11.4	36.6	K
9.5		17.7	41.5		9.2		54.6	47.9		9.5		55.3	1.8		9.4		37.5	45.8		9.3	40	16.8	9.2	
8.0		32.0	14.2	K	7.2	36	5.1	47.2	K	9.4	56	16.8	48.7		9.5	18	0.6	9.7		8.6		27.8	29.8	L
8.7		52.9	7.5	K	9.4		32.9	9.2		9.4	57	16.4	49.0		9.2		8.4	27.9	K	9.3		34.3	24.2	
9.4	17	15.8	49.0		9.5		44.6	55.3		9.2		33.0	54.0		9.2		14.4	27.9	K	9.5	41	0.3	19.3	
9.5		20.4	49.7		9.4	37	1.7	59.3	B	9.5	58	20.5	8.4		9.2		24.2	49.6		9.1		3.5	22.0	
8.7		24.1	14.0	K	9.5		3.7	53.8		9.3	59	4.9	21.7		5.7		53.7	8.5	L	9.5		18.3	40.1	
9.4		43.7	11.1		9.5		56.9	10.0	B	9.4		34.5	35.2		9.0	19	25.7	12.4		9.5		22.9	57.3	B
9.3		47.3	26.3		9.4	38	33.9	54.2		9.4		36.9	31.7		9.5		37.5	16.5		9.5		31.4	54.0	
9.1	18	3.7	9.2	K	9.4	39	4.2	14.0		7.7	1	12.4	38.6	K	9.5		43.0	1.6		6.5		42.8	22.4	K
8.8		16.0	39.6	K	9.1		6.8	42.6	K	8.3		26.1	51.5	K	9.0		49.7	32.0	B	9.0		45.8	33.5	
9.5	19	12.3	35.9		9.0		9.4	19.5	K	8.7		39.4	49.9	K	8.7		50.7	31.1	K	9.2		56.7	50.9	
9.4		27.4	54.6		9.5		33.8	16.1		9.0		44.3	3.5	B	9.5		57.5	44.7		8.0	42	13.9	46.3	K
6.9		36.5	13.5	K	9.2		34.7	57.2	B	9.4		57.7	10.0		9.2	20	4.9	35.5		9.4		35.2	3.8	
9.5	20	2.4	12.1		9.4	40	10.0	56.8		9.4	2	15.5	40.3		9.5		25.0	26.8		9.5		35.6	36.7	B
9.4		27.0	26.0		6.2		24.8	57.5	K	9.5		23.8	48.3		9.1	21	5.2	34.9		9.5	43	8.8	45.2	
9.5		29.2	38.6		9.4		41.5	28.5		9.1		50.4	39.0		9.5		9.0	1.7	B	7.0	44	39.5	2.6	K
8.5		35.8	41.8	K	9.0	41	1.1	42.2	L	9.1		54.5	24.8		8.9		10.6	23.6	B	9.0	45	11.8	42.1	
9.5	21	3.6	57.4		9.5		26.6	19.9		9.5		58.4	1.0		9.4		32.4	51.0		8.1		12.2	5.8	K
9.0		52.5	49.4		9.5		37.2	41.2		9.1	3	15.7	9.4		9.5		49.8	6.2		8.3		21.8	43.9	K

501—560				561—620				621—680				681—740				741—800			
	2ᵘ—3ᵘ		+3ᵛ·⁰		3ᵘ		+3ᵛ·⁰		3ᵘ		+3ᵛ·⁰		3ᵘ—4ᵘ		+3ᵛ·⁰		4ᵘ		+3ᵛ·⁰
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.1	45	50.3	41.2	K	9.5	3	19.9	48.5	B	8.6	27	32.8	32.6	K	9.5	50	45.6	45.1	B	9.0	7	16.5	48.1	
9.5	46	11.0	56.6		9.5		39.3	1.4		9.2		41.0	1.9		9.1		50.3	21.5		9.5		42.0	28.8	
9.5		12.3	14.0		9.5		52.6	39.7		9.5	28	7.1	41.1		9.4	51	18.1	52.8	B	8.8		43.7	14.6	
9.5		58.8	24.9		9.4	4	12.5	53.3	B	9.5		13.0	5.8		9.4		41.7	56.5		9.5		44.8	39.5	
9.0	47	30.3	23.4	K	8.3		19.0	43.9	K	8.9		35.6	7.8	K	9.3	52	14.4	42.6		9.2		59.2	9.6	
9.4		37.8	23.2		9.3		20.2	46.9	B	9.5		44.8	27.0		8.5		14.8	51.3	L	8.5	8	27.6	4.4	K
8.5		45.8	20.7	K	8.9		48.1	8.5		9.1	29	55.0	44.9		8.8		34.2	48.1		9.2		36.3	13.9	
9.4	48	3.8	35.9		9.4	5	33.7	20.7		9.5	30	53.3	57.0		9.5		36.2	53.1		9.3		53.9	39.5	
4.8		30.8	20.3	K	9.4		41.3	2.4		8.8		54.8	27.6		9.3		47.8	34.3		9.4		57.8	45.7	
9.1	49	16.6	36.5		9.2	6	46.6	27.0		8.4	31	47.9	21.7	K	9.3		49.7	43.6		8.5	9	27.7	36.1	
8.8		23.5	25.3	K	9.4		49.7	21.1		9.3		58.6	5.8		9.5		51.5	53.7		9.5		48.5	34.0	
6.6		30.0	53.5	K	9.2	7	9.0	44.3		8.4	32	0.2	38.0		8.1	53	21.7	4.8	K	9.5	10	8.6	43.9	
9.0		34.7	36.0	B	9.4		11.6	35.3	B	9.2		4.4	7.6		9.5		33.3	45.4		8.8		9.2	13.8	K
9.5	50	15.0	47.4		9.2		18.1	48.4		9.3		36.4	8.2		9.3		46.9	31.1		9.2		28.0	0.1	
9.5		15.3	21.8		9.0		21.4	23.8	K	9.5		47.2	15.8		9.5		57.6	54.5		9.1		35.4	18.0	K
9.3		22.2	50.2		6.5		40.8	39.1	K	9.3		53.6	54.4		9.5		58.2	48.4		9.5		46.3	21.0	
9.0		37.3	38.1	K	9.4	8	25.0	48.4		8.5	33	13.3	11.7	K	9.5	55	7.2	47.1		6.3		57.9	37.0	L
9.5		42.7	5.8	B	9.3		25.8	35.9		8.9		17.4	56.0		9.3		53.3	56.8		8.5		57.9	55.1	R
9.1	52	9.3	27.3		8.3	9	40.8	31.1	K	8.8		57.3	9.6	K	9.5	56	13.3	39.8		9.4	11	2.4	28.3	
8.8		11.9	57.6		8.9	11	8.0	29.1	K	9.5		57.6	30.0		7.2		25.4	5.8	B	9.0		3.7	23.0	
9.1		15.4	44.7	K	8.3		13.9	58.5	K	8.8	35	3.0	37.3		9.4		29.6	36.3	B	9.3		21.3	25.0	
9.3		15.7	26.2		9.5		15.1	10.7	B	3.8		16.2	49.6	K	9.5	57	6.7	59.5		9.4		39.1	18.3	
9.0		18.3	30.4		9.2		26.0	54.4		8.2		27.6	42.2	S	6.5		28.5	58.2	K	9.5	12	19.6	20.5	
8.6		27.8	21.1		9.3	12	8.2	21.8		8.3	36	24.2	49.0	K	9.4	58	1.9	10.0	B	8.0		24.3	15.6	K
9.3		34.3	24.2		7.8		56.3	7.8	K	8.9		32.6	58.8	B	8.8		19.2	24.6		9.5		36.1	46.7	
6.5		39.8	50.0	K	9.1	13	20.0	19.1	B	9.0		43.1	33.9		9.5		29.5	24.9		8.5		38.0	52.3	
9.0		58.7	29.8		8.7		27.4	4.8	K	9.0	37	19.0	48.7		9.4		42.6	57.4		8.8	13	8.6	43.0	K
9.0	53	16.6	10.0	K	7.6		33.4	43.0	B	9.4		28.3	11.4		8.0	59	20.0	7.9	K	9.4		32.5	16.6	
9.5		48.0	36.7		9.3		43.3	3.7		6.8		36.8	50.7	K	9.4		20.7	30.5		8.8		54.4	51.8	
9.5	54	26.0	25.6		9.1	14	2.7	29.4	K	6.5	38	43.4	44.6	K	9.1		32.8	0.8		9.1	14	39.7	13.5	K
8.0	55	29.2	22.1	K	9.5		19.6	45.3		8.7	39	16.0	13.1		9.3		42.6	59.5		9.5		50.0	36.3	
9.4		44.7	25.5		9.0		29.1	27.3	K	8.0		18.6	30.4	K	9.5		56.5	40.5		9.0		50.8	31.1	K
9.0	56	16.1	58.0		9.5		51.3	21.8		9.4		22.0	51.4		9.0	0	17.8	12.2		8.3	16	21.3	48.5	K
7.5		33.0	31.4	K	9.4	16	14.5	30.0	B	8.9		57.9	25.6		7.0		28.5	14.9		9.4		21.3	35.7	
9.4		55.0	38.8		8.2		14.7	51.4	K	8.1	40	3.3	49.1	K	9.0	1	19.6	33.9		9.5		49.6	59.1	
7.5		55.6	27.6	K	9.5		19.6	55.0		9.5		11.1	35.0	B	9.0	2	5.3	12.9	K	5.0		53.7	6.6	L
9.5	57	7.7	41.8		7.0		27.9	12.8	K	8.8	41	20.2	58.3		9.2		17.5	7.4		8.3	17	2.5	37.7	K
9.5		24.0	6.5		9.1	17	18.3	38.0		8.3		24.1	6.2		7.6		32.3	9.8	K	9.0		24.6	43.0	K
9.0		41.3	42.2		7.5		34.6	18.7	K	8.6		52.3	43.2		8.3	3	0.0	48.0	K	9.3	18	18.0	54.9	
8.9		51.1	26.9		9.5		57.3	34.6		8.8	43	3.0	35.2		9.3		12.2	59.0		9.5		30.5	3.9	
9.5	58	31.0	45.3		9.2	18	27.6	48.3	B	8.8		12.4	32.1		8.3		35.0	25.3	K	9.3		51.7	51.2	
9.0		33.3	12.8	K	9.5		43.7	8.1	B	7.0		32.8	58.2	L	9.4	4	8.5	50.5		9.5	19	19.6	50.0	
9.5		38.0	30.8		9.4		44.0	45.0		9.5		57.0	46.0		9.5		17.1	46.2		9.5	20	42.5	21.6	
9.5	59	0.1	36.6		9.5		57.3	58.5		8.8	44	9.2	3.9		9.5		26.3	35.0		8.6	21	15.1	15.6	K
9.3		30.4	56.3		8.5	19	17.0	23.8		9.5		34.5	39.4		9.4	5	13.8	20.5		9.4	22	0.7	31.1	
8.9		56.9	38.3		8.5		25.6	51.1		3.0	45	2.0	27.6	K	9.5		14.0	6.6		9.5		47.0	58.6	
9.4	0	3.3	54.4		9.2	20	7.7	37.6		9.4		18.4	30.7		8.5		20.4	31.7	K	9.0		57.8	12.2	K
9.3		46.0	44.3		9.0	22	6.3	16.9		9.5	46	26.2	27.4		8.5		22.5	27.7	K	9.4	23	5.6	31.1	
8.2		46.7	55.4	K	9.5		15.8	49.0		8.8		47.2	43.1		9.5		46.9	4.0		9.5		24.4	28.1	
9.2	1	7.8	26.3		9.4	23	21.4	11.0	B	8.8		50.8	44.0	B	9.3	6	19.9	7.7		8.2		26.5	5.3	K
9.4		26.0	41.9		7.3		35.3	9.4	K	9.5	47	20.9	35.6		9.4		24.4	48.0	B	8.5		37.5	28.3	B
9.3		43.2	44.0		9.1	24	9.0	33.5		9.5		49.9	48.1		9.4		35.0	53.7		9.5		41.1	42.5	
7.0		58.9	40.4	K	9.5		45.6	28.9		9.1	48	5.6	35.0		7.8		36.1	1.3	K	9.2	24	24.6	41.2	
9.4	2	14.6	32.8		8.5		55.5	34.8	K	9.3	49	14.4	55.5		9.1		36.9	21.0	B	8.3		25.0	21.8	K
8.4		24.1	59.4	K	9.5	25	41.3	16.1		9.0		45.2	56.6		9.2		40.3	2.7	K	8.5		40.5	49.6	K
9.0		37.0	23.4		6.5		59.8	31.7	K	9.4		56.1	36.3		9.4		45.0	57.0		8.5		41.4	54.8	K
8.8		39.8	45.9		9.0	26	19.5	12.7		8.8		57.9	35.5	B	7.3		46.0	20.1	K	9.4	26	55.1	55.3	
9.4		48.5	43.4		9.5		30.6	18.0		9.3	50	25.1	36.3		8.8		47.0	21.7	K	9.2	27	9.0	50.5	
8.4		50.3	34.2	B	7.0		38.8	11.5	K	9.5		33.5	36.8		9.3	7	5.6	3.2		9.2		21.7	53.0	
9.5		57.6	34.2		9.1	27	11.9	7.1		9.0		44.6	38.8	B	9.0		11.1	4.4		9.2		22.9	8.3	

801—860				861—920				921—980				981—1040				1041—1100			
	4ᵘ		+31°		4ᵘ—5ᵘ		+31°		5ᵘ		+31°		5ᵘ		+31°		5ᵘ		+31°	
m		′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	28	25.4	26.6		9.1	57	43.6	1.4									9.5	30	32.4	34.9	
9.2		44.3	43.3	B	9.5	58	22.0	21.7	9.0	10	55.2	19.9	9.4	19	33.1	20.8	9.5		37.6	50.8	
7.0		57.1	41.9	K	9.5	59	6.2	0.0	9.0	11	10.3	29.8	B	8.6	20	1.9	17.9		8.0		38.9	48.6	
9.3	29	50.0	47.0		9.5		39.8	0.8	9.4		15.0	3.8		9.5		4.8	50.0		8.9		48.1	16.8	K
7.8		57.4	28.1		8.5		58.9	29.7	K	9.5		15.8	30.6		9.5		14.2	33.5		9.5		49.0	50.7	
9.5	30	21.2	19.4		9.5	0	40.0	13.8	9.4		19.7	53.0		9.5		22.0	30.5		9.5		57.8	14.8	
9.0		35.8	44.0		7.8		43.3	45.0	K	9.4		33.3	55.7		9.5		25.3	30.8		9.5	31	7.3	54.9	
9.3	31	53.1	22.6		9.5		46.9	59.0		9.5		48.6	40.4		9.5		38.3	24.8		6.4		12.7	16.4	K
9.4		55.3	29.2		9.5	1	11.4	57.4		9.5		50.7	39.9		9.5		42.3	32.2		6.6		16.3	50.0	K
9.5	33	12.6	53.9		9.2		22.6	25.4	K	9.2		54.1	59.4		7.7		56.5	40.8		8.9		19.4	48.0	
9.5		54.1	21.1		7.9		37.4	51.2	K	9.5	12	0.5	0.9		8.9		59.4	57.9						
9.5	35	31.5	22.4		8.9		40.0	47.5		9.1		5.4	49.0		7.8	21	6.9	10.0	K	9.3		28.2	17.9	
9.0		51.0	59.6		9.5		52.5	7.5		9.5		6.1	37.5		7.1		13.1	23.5	B	9.5		29.4	43.8	
9.3	37	0.3	59.4		9.5	2	6.4	16.2		9.5		7.2	20.4		8.9		26.2	13.5	K	9.5		34.0	13.4	
9.0		49.2	19.7		9.0		19.0	26.6	K	9.4		8.7	22.7		9.5		33.6	53.7		9.5		41.9	35.4	
5.3	39	55.5	10.6	K	9.4		32.2	32.7		9.1		8.9	19.0		9.5		55.8	49.8		9.5		53.4	23.1	
7.8	41	30.1	18.4	K	9.5		33.7	49.7		9.5		16.2	19.4		9.5	22	9.1	31.0		8.1		58.5	6.3	K
9.4	42	57.0	21.1		9.3		44.8	19.0		9.5		34.2	2.8		9.5		9.8	55.5		9.5	32	22.9	8.3	
9.4		57.3	16.3		9.5		46.7	38.0		9.4		35.0	55.7		8.3		10.4	23.6	K	8.9		46.8	47.8	K
9.2		59.1	28.1		9.3	3	1.3	49.4	B	7.5		46.4	13.0	K	9.2		16.7	30.3		9.5		59.1	29.0	
										9.3		51.0	54.0		9.5		38.9	13.5		9.5	33	15.0	53.7	
7.0	43	7.8	43.6	K	9.4		9.5	9.0		9.5	13	5.3	58.8		7.6	23	20.4	55.0	K	9.5		22.6	0.3	
9.5		14.6	1.8		9.5		49.6	31.4		9.5		6.3	19.6		9.4		26.0	2.6		9.5		36.9	12.6	
9.5	44	43.7	0.0		8.4		50.9	53.5	K	9.5		31.4	56.9		7.0		34.5	45.6	K	9.5		46.3	57.2	
8.5		47.9	56.9	K	9.3		51.6	27.1		9.5		35.6	46.3		9.2		35.9	25.8		9.0		57.7	10.0	
9.5	45	4.2	4.0		9.5	4	8.2	0.3		9.2		37.0	30.5		9.2		40.3	29.0		9.1	34	13.8	41.1	
9.4		30.5	49.7		8.5		10.9	16.8	K	9.5		43.5	40.1		9.5		50.3	12.7		9.3		20.7	59.2	B
9.1	46	5.6	43.3		9.5		22.0	51.5		9.0		44.3	1.1	K	9.0	24	45.8	4.3	K	9.2		21.3	3.6	K
7.2		6.4	54.0	L	8.7		34.3	23.6	K	8.5		45.3	0.4	K	9.5		53.7	24.3		9.4		29.5	29.8	
9.4		7.8	22.5	B	9.5		35.2	58.9		8.7		46.0	37.3	B	9.5	25	5.5	56.0		7.9		46.3	56.2	L
9.3		20.1	52.9		9.1		39.0	52.8		9.2	14	17.1	58.1		9.5		12.0	44.0		9.4		51.6	18.4	
9.4		33.4	17.3	B	9.0		50.7	48.0		9.5		54.3	46.5		9.5		26.0	12.4		9.3	35	19.2	15.4	B
9.3	47	15.2	58.0	B	9.5	5	3.4	40.1		9.5	15	12.9	22.8		9.3		27.5	52.2		8.2		19.7	14.7	K
9.3		46.5	46.2	B	9.2		8.7	50.7		9.3		14.5	7.0		9.0		28.8	31.9	K	9.2		22.5	34.0	
9.5	48	48.0	2.3		8.5		9.3	31.5	K	6.6		18.3	5.0	K	9.5		30.0	14.4		9.4		22.7	16.3	
9.5		48.0	6.0		6.8		18.6	13.8	K	6.4		18.7	0.2	K	9.2		38.4	17.3		9.2		23.7	20.5	
9.3		59.8	0.9		9.2		23.5	31.0		9.5		50.9	33.7		9.5		49.1	36.2		9.5		45.1	10.5	
9.5	49	1.2	5.5		9.5		33.4	26.1		9.4		55.0	7.0		9.5		50.0	0.5		9.0		52.8	13.7	K
9.3	50	11.9	12.1		8.2		38.6	33.7	K	9.5	16	2.2	58.9		9.5	26	40.3	27.8		9.3	36	2.3	34.9	B
8.0		15.8	22.2	K	9.4		52.5	4.8		9.4		16.7	53.2		9.2		41.9	3.1	K	8.8		6.3	8.7	K
8.3		20.3	3.6	K	9.3	6	0.0	32.3		9.0		26.3	54.9	K	7.7	27	0.3	54.5	K	6.7		6.6	14.7	K
9.3		31.5	36.3	B	8.7		5.2	37.4		9.5		30.1	19.9		9.5		11.8	58.5		9.2		15.9	57.1	
9.3		46.6	44.5		9.5		16.3	38.4		9.5		31.2	45.5		9.5		15.9	45.4		9.2		17.5	52.7	
9.5	51	39.8	58.0		9.5		17.1	48.0		9.1		47.8	53.9	K	9.4		31.8	42.6		9.5		18.6	59.3	
9.5		48.3	1.1		9.5		30.9	12.9		9.2	17	7.5	47.2		9.4		34.3	13.0		8.8		48.8	19.3	K
7.0	52	25.6	34.1	K	8.3		43.7	38.3	K	9.2		17.3	1.5		7.8		58.2	13.7	K	9.3		59.3	50.3	
8.9		29.1	25.1	K	9.5	7	6.8	12.4		8.9		30.7	2.0	B	9.2	28	5.7	27.3		8.6	37	32.0	54.5	
9.5		29.6	8.9		9.5		10.2	4.7		9.2		31.8	17.7		8.9		7.0	40.6	K	9.3		35.9	31.2	
9.5		37.3	3.3		9.4		16.8	43.3		9.0		45.1	38.0		9.5		30.6	23.8		9.5		38.7	19.7	
8.5		56.9	3.1	K	9.2		22.5	39.8	K	9.3		46.4	47.9		9.5		32.5	54.7		9.3		42.6	50.3	
9.5	53	4.5	9.6		8.2		38.4	22.5	L	9.5		51.7	19.0		9.4		40.0	7.5	B	9.5		48.9	7.4	
9.4		5.9	5.4	B	8.8		45.3	55.6	K	9.5		56.8	1.9		9.5		40.4	3.5		7.5		49.3	35.7	L
9.5		10.6	43.2		9.4		54.3	1.8		9.0	18	0.1	57.6		9.4		49.0	55.7	B	9.2		52.4	1.6	
9.4		53.7	26.2		9.1		55.2	6.2	K	8.3		6.9	16.0		9.5		53.2	57.2		9.1	38	0.9	24.0	K
9.5	54	13.8	24.1		8.0	8	7.3	39.5	K	8.8		20.3	55.2		9.5	29	31.3	0.2		9.2		16.2	19.3	K
9.0		46.9	17.8		8.6	9	2.4	33.2	K	9.1		39.2	42.6		8.8		34.8	17.4		8.7		17.6	55.4	
9.1	55	12.2	34.5		9.1		5.3	17.9	K	9.1		44.0	44.8		9.5		46.3	25.1		9.5		18.6	26.7	
8.8		19.3	58.4		9.4		7.1	6.3		9.1	19	7.8	21.8		9.5		46.5	19.9		9.4		47.1	31.4	
9.1	56	29.6	3.6		9.2	10	7.5	1.1		9.5		9.6	24.8		9.2		51.9	47.3		9.5		53.9	23.6	
9.4		49.4	3.9		9.5		24.9	20.4		9.4		11.9	46.0		9.5	30	8.3	40.1		9.1		59.0	44.6	
9.5	57	26.1	16.3		9.5		25.0	47.5		9.2		12.7	31.0		8.1		28.1	8.5	K	8.7	39	3.8	9.8	L

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ		+31°		5ᵘ—6ᵘ		+31°		6ᵘ		+31°		6ᵘ		+31°		6ᵘ		+31°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.5	39	11.7	54.9		9.5	51	16.7	23.7		8.8	1	17.9	21.0		9.2	14	11.5	46.4		9.0	25	35.0	38.1	
9.1		26.4	3.1		7.7		26.7	56.8	K	9.3		47.8	9.7		9.3		23.9	26.2		7.0		38.8	32.7	K
9.1		30.3	9.3		9.5		39.6	17.7		7.9	2	19.9	12.3	K	8.5		24.4	50.7		9.5		46.9	29.1	
8.7		33.8	28.6		6.5		48.0	1.2	K	9.5		42.0	4.6		9.1		42.0	17.4		9.3		52.9	31.6	
9.4		38.7	9.3		7.8		49.9	31.1		9.5		47.9	10.3		9.5		50.9	27.3		8.6		55.9	30.2	K
9.2		42.5	47.1	K	9.4	52	0.2	54.3		8.8		52.8	27.1		9.5	15	17.7	15.6		8.6		59.1	56.2	
9.1		58.4	27.3		9.5		0.4	47.4		9.0	3	1.9	26.0		9.0		26.1	53.6	K	9.4	26	0.6	18.2	B
9.5	40	6.8	7.7		8.0		26.9	19.3	K	9.5		18.0	7.2		9.4		43.7	42.5		9.5		4.5	18.3	B
9.5		21.3	46.8		9.5	53	14.1	49.7		9.0		33.0	8.3	K	9.4		57.9	9.9		9.4		16.9	57.4	
9.5		27.7	49.3		9.5		21.5	24.8		9.1		35.6	40.2		9.2		58.4	6.9	K	9.3		34.4	12.6	
7.0		31.4	44.1	K	9.4		22.6	2.6		9.0	4	6.0	26.6	K	9.5	16	11.4	23.2		6.5		36.8	35.2	K
9.5		42.3	48.5		9.3		39.5	36.3		9.5		9.8	41.6		8.9		19.6	59.1	K	8.9		39.0	54.5	
9.5		48.9	52.4		9.2		45.1	0.6		9.5		10.1	47.7		9.2		38.5	29.1		9.5		48.9	12.3	
9.5		55.4	56.7		8.8		45.3	2.0	K	9.4		20.0	33.3		9.5	17	4.0	51.1		7.8	27	10.9	27.9	K
8.0	41	6.8	1.0	K	7.4		58.6	23.1	B	9.5		22.4	23.4		9.4		26.8	9.4		9.5		33.5	12.6	
9.4		18.0	41.1		9.3		59.0	26.7		9.4		47.9	4.6		8.8		37.5	7.9	K	8.1		35.2	1.9	B
9.1		22.3	9.5		9.4	54	3.8	38.8		9.1	5	12.9	4.9	K	9.3		47.9	40.8		9.3		51.5	2.9	
9.5		31.9	25.3		9.5		26.3	9.9		9.4		16.3	1.8		9.5	18	19.5	7.2		7.8		57.0	49.3	K
8.3		37.0	33.7	K	9.0		30.1	19.3	K	8.6		23.9	42.4	L	9.5		34.7	4.2		9.5	28	11.4	3.5	
9.5		51.3	37.9		9.4		36.9	12.1		9.5		28.7	50.3		9.5		41.9	4.0		9.2		29.9	53.9	K
9.5		58.1	30.7		8.7		37.3	38.0	K	9.2		35.1	44.1		9.0	19	0.7	20.9	B	9.3		39.9	8.8	
9.4	42	0.4	18.4		9.4		47.2	34.9		9.3		38.9	20.3		9.5		20.6	24.5		9.5		40.8	11.9	
9.0		2.6	17.8		9.5		49.9	29.7		9.5		50.6	35.9	B	9.2	20	2.8	35.8	R	7.0		43.3	0.0	K
9.5		7.6	5.5		9.5	55	2.6	6.5		8.0		51.9	30.4	K	9.2		6.0	39.8	R	8.1	29	0.9	20.1	L
9.5		56.5	47.8		9.5		5.0	8.3		9.5		52.6	35.2		9.5		7.9	20.3		8.8		5.9	27.0	R
9.4	43	5.3	44.6		9.3		5.4	0.6		8.5	6	17.9	52.8	L	9.5		21.7	58.8		8.7		14.8	35.2	
8.7		11.5	24.6	K	8.7		15.0	3.0	B	9.5		32.6	36.0		9.4		43.3	37.0	B	9.5		24.9	24.6	
9.2		13.3	37.0		9.5		28.6	20.3	B	9.4		33.4	8.2		8.8		49.9	53.2	R	9.1		26.1	56.7	
9.5		16.8	53.0		9.5	56	4.9	48.2		8.8		47.0	23.5	K	8.5		53.0	33.9	R	7.1		41.8	53.2	L
9.3		39.7	41.9		9.2		19.8	59.6		9.3	7	9.9	5.2		9.2	21	0.9	58.2		8.3		51.0	42.9	K
9.5		58.0	34.0		9.5		22.7	2.7		7.8		11.6	35.5	K	9.5		3.4	19.5		9.5		51.7	12.0	
9.1		58.2	26.6	K	8.8		27.2	39.5		8.8		12.8	11.8		8.1		12.1	58.1	L	9.4	30	6.5	38.4	
9.5	44	35.6	27.8		7.9		31.6	57.7	K	9.3		16.5	0.3		9.5		16.5	4.8		9.5		9.3	3.2	
9.1	45	5.3	7.1		9.1		46.9	6.9		9.0		19.9	24.5	K	9.5		28.0	33.3		9.4		16.9	26.4	
9.1		8.3	7.3		8.0		57.9	25.3	L	9.4		40.3	25.0		9.0		41.9	9.1	R	9.5		19.4	12.8	
9.0		14.2	7.3		8.6	57	10.6	58.5	K	9.2		45.0	8.5		9.3		42.4	13.8		9.5		38.4	49.4	
8.0		14.7	11.3		9.5		34.5	33.4	B	9.5		47.7	55.7		9.5		53.7	49.9		9.3		58.0	44.5	
9.4		29.1	45.1		9.2	58	0.6	58.6		9.4		55.6	17.1		8.7	22	4.9	40.5	R	9.4	31	11.8	50.9	
6.2		35.2	40.5	K	9.5		7.7	55.8		9.5	8	12.0	39.3	B	8.8		21.9	19.2		9.4		13.3	24.7	
9.5		56.3	58.9		9.5		36.9	26.0		9.5		16.2	57.3		9.0		22.4	36.0		9.2		14.9	19.0	
9.5	46	5.7	12.1		9.1		39.3	58.4		9.4		41.6	21.9		9.3		32.0	32.8		7.7		20.7	14.1	K
9.4		29.8	50.3		9.4		45.0	2.8		9.5	9	6.4	13.5		9.5		32.4	57.7		9.3		23.9	38.0	
9.5		49.0	40.7		8.0	59	0.9	12.9	K	8.6		8.7	9.8	K	9.1		44.9	9.6	K	8.0		41.8	28.2	K
9.4		58.5	13.0		9.3		3.9	50.0		8.8		39.9	25.0	K	9.5	23	7.8	11.0		9.5		58.9	28.9	
9.2	47	43.1	40.4	B	9.4		17.1	9.4		9.5		48.7	50.8		9.0		10.2	25.1		9.4	32	2.0	38.0	
9.2		54.4	46.0	B	9.4		42.4	50.3		9.4		55.0	27.8		9.5		15.7	29.3		9.5		22.6	36.5	
8.9		59.9	12.6		7.2		43.8	16.8	K	9.5	10	40.9	30.5		9.5		40.6	2.6		9.5		26.4	3.7	
9.1	48	4.4	39.5		8.7		48.7	45.5	K	9.5		51.9	52.7		9.4		43.0	53.0		8.1		46.7	35.1	K
9.1		8.5	5.2		9.4		58.9	33.2		8.9		55.5	13.7	K	9.1		43.4	26.6	K	8.2	33	9.6	56.6	
9.5		26.5	26.7		9.4	0	2.0	46.0		9.4	11	0.6	17.4		9.5	24	17.9	3.7		9.2		22.4	51.2	
9.3		41.2	35.8	K	9.5		15.9	28.5		7.7		26.8	41.8	K	9.1		31.1	46.0		8.6	34	10.9	5.8	
9.5		44.8	51.2		9.5		33.7	25.5		8.8		35.1	23.0	K	9.5		42.6	56.0		7.8		11.4	30.5	L
9.5	49	12.0	54.7		9.2		44.9	37.5		9.1		50.0	11.9		9.0		44.7	16.3		7.8		17.8	35.2	L
9.0		41.2	0.7	K	9.5		47.0	47.2		8.9	12	9.0	12.9		8.9		46.9	6.2		9.5		22.0	27.3	
9.5		43.8	5.1		9.2		47.9	0.8	K	8.8		25.1	4.5		9.4		51.9	13.6		9.3		38.9	10.5	
8.0	50	0.9	2.7	K	9.5		56.6	1.3		9.4		27.1	57.2		9.5		55.7	40.5		9.5		57.5	47.4	B
9.4		47.6	47.5		9.1	1	1.1	26.5		9.4	13	5.9	35.2		9.0		58.9	6.9	K	9.3	35	3.2	36.8	
6.8		53.1	55.5	K	9.4		2.8	52.9		7.8		7.6	0.7	L	8.4	25	11.9	4.4	K	9.0		9.7	29.4	
9.0		56.6	25.5		9.3		10.2	33.4		9.2		24.8	36.1		9.3		12.8	2.1	B	9.3		31.9	16.3	
9.5	51	0.0	10.7		7.5		13.1	58.9	L	9.5	14	5.0	19.3		9.3		24.3	25.3	B	9.5		38.3	35.1	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ		+31°		6ᵘ—7ᵘ		+31°		7ᵘ		+31°		7ᵘ		+31°		7ᵘ		+31°	
m				m				m				m				m				
9.4	35	53.7	19.5	B	9.1	50	6.0	42.1		8.5	6	47.3	5.6	K	8.9	18	45.9	48.2		9.3	32	23.5	13.9	
8.3		57.5	23.4	K	9.5		23.1	9.8		9.2		48.1	18.1		9.1		48.4	34.1		9.3		25.4	8.5	
9.5	36	8.9	36.0		9.3		25.4	52.6	K	9.4		54.0	58.7		9.5		53.8	3.2		9.5		51.4	19.6	
8.6		35.8	59.1	K	9.5		45.2	22.2		9.3	7	49.1	6.3		9.1	19	5.8	24.7		8.9	33	12.5	32.4	
9.1		48.9	31.4	K	9.4	51	3.6	8.3		9.0		58.8	34.4	K	9.3		6.9	47.2		9.0		18.0	33.9	
8.9		59.0	24.2		9.4		8.0	16.2		9.2	8	7.1	5.7		9.5		16.5	54.0		9.1		18.9	18.4	B
9.1	37	2.5	33.1		9.3		14.8	33.6		6.7		10.6	57.3	K	9.5		36.2	9.2		9.3		24.9	3.5	
9.5		11.4	53.7		9.5		26.0	5.1		9.3		10.7	39.4		9.1		40.5	50.0		9.3		29.9	20.9	
8.8		23.9	25.9	K	9.3	52	1.3	30.7		6.5		49.0	12.6	L	9.0		52.4	56.1		8.3		54.6	34.8	K
9.4		24.9	23.3	B	9.5		17.9	2.3		9.3	9	6.8	46.5		9.4		55.3	30.0		9.5		56.6	42.0	
9.5	38	8.7	12.5		8.0		58.6	26.5	B	8.5		9.6	5.6	K	8.8		57.8	18.9		9.5	34	1.2	6.4	
9.5		15.2	31.5		9.4	53	15.5	46.9	B	9.5		27.9	50.7		9.3	20	2.5	31.2	B	9.5		18.7	50.2	B
7.3		21.9	50.8	K	7.8		18.7	34.1	K	9.3	10	51.8	55.5		9.5		8.4	55.4		9.5		23.5	29.9	
7.8		36.8	10.6	L	8.0		25.1	46.0	K	8.2		58.0	38.0	K	9.5		33.8	36.0		9.5		26.8	7.2	
8.5		58.8	22.0		8.8		40.1	7.8	K	9.5	11	4.3	12.4		9.5		34.6	24.0		9.4		39.7	58.1	
8.5	39	18.4	25.1	K	9.4	54	4.4	2.4		9.4		5.9	20.6		9.5		55.2	16.8		9.5	35	0.3	38.8	
9.5		45.4	20.0		9.5		7.5	47.1		9.0		9.7	4.8	B	9.0	21	9.4	33.8		9.4		11.5	8.9	
7.5	40	35.9	41.9	K	9.2		12.1	7.8	B	9.1		11.4	29.1		8.0		10.0	26.4	K	9.1		19.4	19.0	
9.1	41	12.4	13.1		9.1		14.0	15.7	K	9.4		12.1	35.3		8.7		12.9	49.4		9.3		24.3	4.2	
8.7		13.0	58.9	B	9.3		41.0	59.5		8.7		27.2	44.1	K	9.4		23.5	28.7		7.7		25.5	27.4	K
8.3		16.4	33.0	L	9.5	55	29.0	13.0		9.0		27.4	44.9	B	9.0		27.4	51.3		9.1	36	25.6	46.0	
9.2		19.3	38.0		9.5		29.1	19.0	B	8.8		37.4	58.0	K	9.4	22	45.8	14.2		9.0		34.0	55.1	
9.5		41.5	34.4		9.4		50.2	53.7		9.1		38.1	44.3		8.8		48.2	13.7	B	9.5		45.6	26.4	
9.5		43.0	53.4		8.6	56	9.0	35.1	K	8.8		56.4	52.9	K	9.3		51.2	53.5		9.4	37	41.7	39.9	
9.2		49.8	8.8		9.5		11.6	9.6		9.3	12	8.8	49.3		9.4		59.4	31.4		9.4	38	23.6	28.3	
9.5	42	43.0	18.6		9.5		14.2	52.9		9.5		16.2	0.4		8.3	23	1.4	24.0	K	9.5		34.2	56.5	
9.2	43	13.2	31.6		6.7		27.5	37.6	K	9.2		16.9	11.3		9.1		21.8	39.1		9.3	39	17.2	30.9	
8.8		43.0	36.5	K	9.3		44.3	14.7		9.1		22.7	18.6		8.5		36.6	35.4		8.5		35.6	15.8	K
9.4		57.7	13.1	B	9.0		53.4	18.7		8.8		26.4	8.9		9.1		43.0	2.8		9.3		42.1	42.3	
9.5	44	3.3	9.1		9.2		55.0	30.4	B	9.5		31.1	28.3		9.1		51.5	35.9		9.4		44.1	47.5	
9.5		8.8	38.1		9.2	57	12.7	54.5		8.4		32.5	21.1	B	8.7	24	15.7	59.9		9.5	40	3.0	38.2	
9.2		28.7	9.7		9.5		40.8	10.2		9.4		35.3	21.1	B	7.8		20.4	9.9		8.6		14.8	5.6	
7.8		36.7	17.7	L	9.5	58	0.3	40 6		8.0	13	2.4	8.4	K	9.5		32.0	56.5		9.5		34.3	36.8	
8.5		52.5	41.2	K	8.7		21.5	25.3	L	9.5		37.5	21.1		9.3		44.7	58.3		9.5		35.6	30.6	
9.5	45	14.4	0.0		8.7	59	3.1	32.6	K	9.5	14	3.6	0.3		8.5	25	6.9	32.4	K	9.5		44.6	22.7	
9.4		30.5	25.4		9.0		13.0	41.6		9.5		4.7	59.1		9.0		20.3	30.7		7.0		48.0	58.0	K
9.4		32.2	17.5		9.1		27.2	52.2	K	9.4		12.1	4.3		9.1		26.9	6.7		8.1		53.9	58.5	K
8.8		35.5	33.7	L	9.5		29.7	40.6		9.1		34.6	41.8		9.0		27.5	26.0		9.2	42	19.2	2.7	
9.4		50.8	10.3		9.4	0	12.5	48.9		9.1		40.0	30.7		9.5		47.9	44.0	B	9.2		30.6	40.2	
9.2		53.7	57.5		9.4		22.3	23.7		8.8		45.4	43.3	K	6.5		56.4	16.1	K	9.5	43	17.1	34.7	
8.5		56.5	6.5	K	9.3	1	18.2	23.7		9.4		51.8	8.5		9.4	26	2.5	30.7		9.3		25.6	45.7	
8.6		58.7	56.1	L	9.4		28.6	26.7		9.4	15	6.9	58.4		9.3		35.2	31.4		9.5		49.6	16.3	B
8.6	46	2.5	19.2		9.4		44.7	46.4		8.7		23.9	8.3	K	8.6		40.7	1.5	L	9.2		50.0	59.0	
9.5		14.9	4.7		9.1		58.8	39.1		9.5		27.2	31.2		8.2		41.4	46.5	K	8.2	44	16.8	2.8	B
9.5		16.0	13.4		8.2	2	19.6	35.7	K	9.5		40.0	49.5		9.5		46.3	26.7		9.5		19.1	55.0	
8.8		20.0	48.6		8.7		43.3	42.9	K	9.2	16	3.6	0.3		9.5		56.2	34.4		9.5		36.0	3.3	
9.5		45.4	3.4		9.4	3	6.8	50.4		9.5		27.7	11.7		8.5	27	8.9	58.7	K	9.3		44.7	25.1	
9.2		51.1	28.7		9.5		12.1	31.9		9.1		40.4	24.3		8.9		13.4	25.7		9.0	45	0.0	11.1	
8.3	47	24.0	34.1	K	9.4		13.5	4.3		9.5		58.0	17.5		9.4		19.8	6.4		9.0		14.0	23.2	
9.4		34.9	0.2		9.5		25.8	6.1		9.5	17	12.3	36.9		9.5		46.2	37.8		8.6		24.9	22.1	B
9.2		45.4	13.9		9.5		41.7	1.2		9.3		15.4	28.5		9.5		50.9	28.9		9.5		30.4	17.2	
9.1		52.8	26.7		9.1		46.1	23.2		9.5		15.7	23.5		9.5	28	12.5	8.1	B	9.5		39.7	28.4	B
8.5	48	17.3	24.2	K	9.0	4	35.5	6.7	K	9.2		20.6	20.5	B	7.5		15.3	56.0	K	8.9		47.5	9.4	
9.4		18.0	50.3		9.2		50.1	8.1		7.5		22.0	54.2	B	8.3	29	7.4	1.3	K	8.9		47.8	14.1	
9.2		19.8	59.6		9.5		57.4	18.3		9.4		30.4	5.0		8.1		9.9	38.8	K	9.3	46	0.4	49.2	
9.5		31.3	18.3		8.5	5	27.7	38.4	L	9.0		31.1	53.2		9.2		37.0	27.0		9.5		8.7	58.9	
8.5		49.4	38.1	L	8.5		33.3	43.6	L	9.1		37.4	11.5		9.5	30	26.1	21.8		9.5		25.6	7.5	
9.3		53.5	18.0	B	9.5		35.2	50.9		9.1		49.2	33.9		9.3		36.0	51.2		9.4	47	7.6	51.3	
9.5	49	30.0	16.2		9.1		47.8	16.0		9.3		58.4	43.4		9.4		42.4	17.3		9.4		36.1	57.8	
9.2		50.4	28.7	K	9.1	6	19.4	36.3	K	9.5	18	26.3	40.9		9.4	31	40.3	38.4		8.7		56.6	31.8	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ʰ—8ʰ	+31°			8ʰ	+31°			8ʰ	+31°			8ʰ—9ʰ	+31°			9ʰ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	48 20.8	33.6		9.3	3 23.4	21.6		9.1	21 51.7	54.7	B	9.5	38 53.4	48.3		7.5	0 51.9	18.5	K
9.3	33.1	42.6		9.5	31.2	45.3		9.5	53.3	11.1		9.3	39 2.9	53.3		9.3	57.0	2.0	
9.0	49 11.2	23.0		9.2	45.5	5.4	B	9.4	22 2.8	51.2		9.2	33.8	23.7		9.4	1 2.1	1.8	
9.1	27.6	41.3		9.2	53.4	41.7		9.5	21.9	41.1		8.5	53.6	1.4	K	9.3	32.2	55.9	
8.3	50 2.8	6.6	K	9.5	5 17.6	22.2		9.5	34.7	25.5		9.5	40 16.9	51.7		9.5	51.3	9.9	
8.5	16.6	53.4		8.8	46.6	43.0	K	8.5	37.3	8.0	K	9.0	54.1	44.8	K	6.5	52.2	33.8	K
9.5	28.1	22.7		9.1	6 6.9	11.1		9.5	23 28.3	13.9		9.4	54.2	16.0		9.4	52.7	7.9	B
9.1	43.2	39.1		9.0	8.9	7.1	B	9.1	31.4	18.4		9.5	41 23.9	21.9		9.5	2 58.5	49.7	
9.5	50.6	54.7		9.5	11.8	42.6		9.3	43.2	8.1		9.5	36.8	30.5		9.5	3 30.0	5.0	
8.5	55.3	57.2	K	8.8	17.2	49.3		9.5	48.6	39.3		9.5	42 2.9	43.8		9.5	4 16.9	49.4	
9.3	51 8.5	6.9		9.1	43.8	1.5	K	9.2	56.0	42.5		9.1	7.9	56.3	B	9.5	53.8	37.1	
9.4	35.4	0.9		9.3	54.5	56.5		9.2	58.7	35.5		9.5	9.6	10.1		9.0	5 17.9	40.6	B
9.5	48.3	45.0		9.3	7 20.1	22.3		8.5	24 9.9	59.8	B	9.3	20.4	31.2		8.9	25.4	20.5	
9.5	53.6	38.1		9.5	23.8	6.1		9.2	58.9	32.1		9.5	44.5	34.2		9.5	6 13.9	23.9	
9.0	52 34.1	34.7		9.5	8 2.6	24.3		8.8	25 0.7	22.2	K	9.4	44.7	28.7		8.4	21.5	28.8	L
9.4	53 38.3	43.4		9.1	16.6	5.2		9.4	4.6	28.7		9.2	43 24.9	42.1		9.5	48.0	38.3	
9.3	46.8	2.3		9.0	35.2	6.5		9.5	30.3	16.6		9.2	27.3	34.3	B	9.5	7 36.9	13.2	
9.5	59.1	30.2		9.0	58.6	43.7		9.5	38.5	48.0	B	9.5	40.9	30.8		9.5	51.5	41.8	
9.0	54 35.6	25.3	K	8.0	9 2.1	16.5	S	9.5	26 5.9	4.1		9.5	49.4	47.6		9.5	8 28.6	1.8	
9.2	55.4	9.4		9.5	8.0	24.0		9.5	9.2	6.7		9.4	54.0	32.8		9.2	34.9	37.9	
9.5	56.1	30.2		8.3	11.6	4.7	B	9.3	17.2	41.3		8.9	44 10.7	37.9	K	7.8	42.6	53.1	K
9.4	55 3.4	59.2		9.3	20.6	17.9		9.3	30.6	34.0	B	8.9	25.4	31.1	K	9.5	53.5	40.3	
9.5	25.1	15.4		9.4	22.8	11.7		9.5	43.0	51.7		9.5	32.6	41.4		9.5	54.8	1.5	
9.3	35.1	35.0		8.3	10 32.4	9.2	L	8.8	27 0.7	6.5		9.5	41.0	16.3	B	9.5	58.9	31.7	
9.5	56 20.4	54.0		9.5	50.3	47.1		9.5	24.4	29.5		9.2	45 8.1	16.3		9.5	9 9.8	56.5	
8.1	27.9	43.3	B	9.3	11 13.6	57.4		9.5	28 32.6	55.9		9.2	20.9	3.9		9.5	46.0	5.7	
9.3	57 14.8	59.9	B	9.5	25.0	19.8		9.2	29 27.0	20.0		5.3	23.3	8.0	S	9.2	10 9.9	7.6	
8.6	15.1	14.0		9.5	39.9	5.8		8.5	41.3	39.7	K	9.5	46 11.0	41.8		9.1	45.7	15.0	
9.5	39.9	3.3		9.4	41.7	22.9		7.5	41.7	12.5	L	9.5	40.9	37.2		9.5	49.7	32.8	
9.4	42.1	19.2		9.1	12 37.1	33.0		9.0	44.4	55.7		9.0	47 47.6	10.3		9.0	11 14.9	33.8	B
9.5	46.2	57.1		9.3	41.6	51.5		9.5	51.3	11.1		9.1	57.9	51.7		9.5	13 58.9	28.0	
9.4	58 5.1	11.9		9.1	50.6	27.8		9.0	30 20.5	0.4		8.5	48 22.7	30.4	K	9.5	14 7.4	10.3	
9.2	14.6	56.8		9.5	13 7.1	27.1		9.3	43.8	17.9		8.9	50 0.4	0.2	L	9.5	14.9	54.2	
8.3	29.1	6.0	L	9.2	7.9	49.0		9.0	45.6	13.6	B	9.5	11.9	37.7		9.0	15 1.8	38.7	
7.7	32.5	58.4	K	9.5	25.4	25.3		9.4	31 2.2	10.7		9.0	14.8	7.1	K	9.5	42.1	25.1	
9.1	40.6	15.7		9.4	31.7	41.2	B	9.5	9.7	55.5		9.5	21.9	24.6		9.5	47.2	33.7	
9.2	47.3	35.6	B	9.5	37.1	33.0		8.0	11.0	31.5	K	9.5	23.5	13.0		9.0	49.7	20.7	B
9.5	59 27.7	48.8		9.1	46.6	25.7		9.5	11.3	4.0		9.5	52 14.1	48.7		7.5	16 48.3	7.1	K
9.4	30.6	46.1		9.3	52.5	34.0		9.2	44.6	44.8		8.9	46.4	24.3		8.8	17 18.0	56.3	K
9.5	44.8	7.4		9.2	52.5	54.7		9.5	32 18.4	2.4		9.2	53 8.0	36.0		9.4	22.5	12.4	
9.1	0 11.1	36.1		9.5	14 26.9	50.9		9.3	23.8	54.9		9.5	30.7	1.0		9.4	23.3	43.0	
9.2	31.3	46.3		8.9	38.1	51.2		9.5	27.7	21.6		9.5	40.5	22.6		8.8	36.7	46.4	
9.2	44.2	48.3		8.8	45.1	7.5	K	9.0	33 6.3	41.9		8.0	51.5	55.5	K	9.2	48.8	23.4	
9.3	46.9	12.6		8.3	50.5	45.7		9.0	7.3	24.6	K	9.5	55 0.3	12.9		8.4	53.0	48.8	K
9.0	1 9.1	28.8		9.4	54.2	57.8		9.2	35.5	9.7		9.5	26.0	49.4		9.5	18 43.2	48.8	
9.3	18.5	13.6		7.5	15 3.9	46.6	K	8.7	44.8	50.2		9.5	26.7	2.9		9.4	19 13.5	8.2	B
9.5	40.9	51.9		8.4	11.7	12.2	B	9.0	52.0	33.8		9.5	55.0	41.7		9.5	20 15.6	37.9	
9.5	56.2	50.5		8.8	16 23.9	30.7		8.4	34 37.4	50.2	K	9.5	56 0.6	4.0		9.5	19.3	25.5	
9.4	2 3.4	8.5		8.8	24.6	50.8		9.5	35 7.4	44.9		9.5	57 33.5	52.2		9.5	27.4	58.1	
9.3	18.1	26.1		8.6	43.4	32.1		9.4	31.7	0.4		8.3	38.1	29.1	K	8.8	21 18.7	49.8	
9.4	22.0	50.4		8.4	17 1.8	19.8	L	9.5	36.6	9.5		8.9	58 9.5	57.2		9.5	30.6	38.5	
9.5	26.9	3.5		8.5	2.5	36.2	K	9.4	42.0	32.9		9.5	21.0	31.8		7.3	32.5	56.8	K
8.0	27.0	43.7	K	9.2	18 2.0	46.1		8.9	47.4	23.9	B	8.5	21.5	12.5		9.4	22 0.0	18.6	
8.3	27.7	50.2	L	7.9	35.9	1.5	L	9.0	58.8	38.8	B	6.7	50.1	47.5	K	9.3	19.3	28.2	K
9.4	34.6	24.0		9.5	19 6.6	45.5		9.4	36 8.0	22.8	B	9.5	59 6.9	18.8		9.0	36.3	47.1	
9.4	54.5	34.4		9.5	6.9	52.4		6.3	27.0	13.0	K	9.0	19.4	39.4		9.0	48.7	39.2	
8.0	3 10.1	15.8	L	9.5	26.0	0.7		9.5	51.4	11.1		8.3	48.4	11.9	L	9.4	23 0.6	17.5	
9.4	13.2	34.0		8.8	20 17.9	17.0		9.4	37 8.3	15.1	B	9.3	0 9.4	3.4		9.4	15.0	5.3	
9.0	19.0	31.3		8.2	49.6	51.5	S	9.5	54.9	43.4		9.0	19.9	5.3		8.8	31.7	5.3	
8.8	21.9	40.8	B	9.5	21 36.2	10.9		9.2	38 3.0	13.6		9.0	47.6	4.2		7.8	24 25.0	12.4	K

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	9ᵘ	+31°			9ᵘ—10ᵘ	+31°			10ᵘ	+31°			10ᵘ—11ᵘ	+31°			11ᵘ	+31°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.0	25	48.3	32.0	9.2	44	43.4	27.4	8.8	10	15.4	20.1	K	8.0	37	51.7	23.8	K	9.5	4	6.5	57.3	
8.5	26	6.0	11.8	9.1		46.7	14.4	B	9.4	11	24.3	11.0		8.2	38	21.0	26.2	B	8.2		27.2	1.3	K
8.3		15.0	39.5	L	9.5		55.6	5.7		9.5		36.8	6.7			9.1		36.7	59.8			9.5		35.4	3.3	
9.4		30.3	56.1		9.2	45	20.1	38.8		9.5		45.4	13.2			9.1		49.6	36.9	B		9.4		39.2	40.3	B
9.5		30.7	4.5		9.5		54.7	53.9		7.1	12	35.3	23.4	B		9.5	39	4.6	15.7			9.1	5	58.7	10.7	
9.5		47.5	4.8		8.0		55.3	20.9	K	8.5		51.9	10.5			8.9		13.2	0.9			9.4	6	14.8	45.8	B
7.5		53.4	42.8	K	8.5	46	16.0	40.5	K	9.5	13	9.0	24.1			9.4		23.5	53.4			9.5	7	39.0	24.4	B
9.5	27	15.8	5.8		9.5		35.3	55.7		9.4		17.3	27.6	B		9.5	40	17.9	41.4			9.5	8	56.7	37.1	
9.5		33.7	20.8		9.5		38.1	28.5		9.4		39.7	51.6			9.4	41	10.9	23.8			9.1	9	37.9	54.2	
9.4		38.1	19.6	B	9.2	47	7.3	49.5		9.5	14	30.0	46.7			9.4		14.2	25.4			8.5	10	41.7	39.5	
5.3	28	6.4	48.2	K	9.5		13.3	20.9		8.3		36.8	3.3	K		9.5		43.4	38.2			9.5		45.0	27.6	
8.9		36.5	54.5	K	8.6		15.4	51.2	K	9.3		41.9	37.4			9.4	42	43.6	37.9			9.5	11	10.8	21.4	
9.3		39.1	43.8	B	9.5		23.6	8.2		7.0		46.8	34.9	K		9.5		49.1	0.2			9.3		29.9	18.0	K
8.0		51.3	37.5	L	9.5	49	27.0	39.9		9.5	15	44.4	35.6			8.0	44	48.9	10.5	K		8.6		51.3	19.2	K
9.5		54.3	55.4		8.0		51.9	13.3	K	9.2	16	19.3	0.1			9.1	45	37.2	3.4			9.0	12	14.3	43.0	
9.4		56.8	13.8		9.4	50	8.0	57.1		7.5		45.9	6.5	K		8.8		41.5	7.7	B		9.4	13	9.4	8.8	
9.5	29	55.2	30.3		9.5		35.3	58.2		8.8	17	23.4	18.4	K		8.0		45.0	4.0	K		9.4		45.0	51.5	
8.5	30	0.7	25.4	K	8.0		43.1	5.8	K	9.0		29.2	53 0			9.0	46	21.7	16.9	K		9.5		51.2	48.2	
9.3	31	1.0	31.3		9.5	51	21.3	0.8		9.5		29.9	41.4			7.0		25.0	20.1	K		9.4		56.7	52.9	
9.0	32	17.0	22.6		9.3	52	0.0	7.3		9.1	18	41.4	19.0			9.5	47	2.4	40.4			9.5	14	39.8	42.0	
9.2		19.2	47.5		9.2		38.0	41.9		9.2		45.0	26.0			9.5	48	2.0	10.9			9.5		53.3	15.2	
9.2		22.5	50.3	B	8.6		50.0	31.7		8.9	19	0.7	37.5	B		9.3		9.6	47.4	B		9.5	16	50.8	24.9	
9.4		31.3	40.7		7.7	53	0.0	16.1	K	8.7	20	4.4	10.8	K		8.0		20.7	49.2	K		9.2		58.8	47.3	K
9.5		40.7	13.0		9.2	54	24.4	36.3	K	9.4		22.9	39.8			9.2		28.3	25.4			9.5	17	5.7	48.4	
9.4		46.5	9.1		9.5		26.6	1.8		8.9	21	55.2	35.6	K		9.0		37.7	52.2	K		9.0		40.9	23.5	
6.2	33	0.1	55.4	K	9.5		42.9	50.8		8.9	22	2.6	47.7	B		9.2	49	36.0	27.8			9.5	20	24.8	0.3	
9.5		3.9	14.8		9.4		44.0	1.7		8.8		46.5	3.6			7.0		38.4	25.7	L		9.5		37.5	51.8	
9.4		38.3	50.6		9.2		46.9	45.3	K	8.2	23	27.7	48.0	K		9.2		47.1	16.7			9.4		47.2	59.7	
9.3		41.0	2.7	B	9.5		56.9	9.3	B	8.8		35.4	48.4	K		9.5		51.4	19.7			9.4	21	22.3	46.6	B
9.4		43.7	1.4		9.3	55	4.8	39.1		8.7		49.2	29.6			8.0	50	1.5	51.9	K		7.0		36.2	12.8	K
8.8		50.2	56.2	K	9.5		16.0	10.0		9.4	24	6.1	0.2			8.3		24.4	30.1	K		9.4		57.5	59.9	
9.4	34	3.3	2.8		9.5	56	27.3	5.0		9.0		20.4	45.0	K		9.5		47.6	24.9			9.4	23	4.1	26.3	
9.5		5.4	33.3		9.5		31.7	36.4		9.3		22.2	52.7			9.4		53.7	34.6			9.3		53.0	54.1	
9.4		33.6	52.6		9.3		51.4	37.7		8.1		59.0	31.2	L		9.2		59.7	12.9	K		7.5		57.8	45.5	K
9.5		36.6	22.0		7.5	57	15.7	48.0	K	9.5	25	8.2	37.1			9.5	51	32.2	54.3			9.5	24	12.7	50.5	
9.5	35	43.7	26.8		9.5		45.5	2.2		9.2		19.1	52.6	K		8.9		58.8	47.3			7.7		18.9	2.6	K
9.5	37	3.9	20.3		8.2		48.7	55.3	K	9.4		44.8	59.3			9.5	52	14.3	51.1			9.5	25	45.3	34.5	
9.3		35.6	23.6		8.4		53.9	26.0		9.4		52.2	36.4			8.8		31.3	39.1			9.5	27	4.3	53.0	
9.1		37.8	31.8	B	8.9	0	10.9	39.1		9.5	27	6.1	19.8			9.5	53	22.5	10.2			7.3		21.9	18.1	L
9.0		37.9	8.7	K	8.4		11.8	18.8		9.3		8.8	25.8	B		8.8	54	1.2	37.9	B		8.5		41.5	8.2	
9.5		45.2	30.2		9.3	1	8.4	39.8		9.0		41.0	17.1			9.5		17.8	44.3			8.3	28	27.3	31.4	K
9.3		46.0	51.5		9.2		13.5	43.9		9.4		42.8	54.9	B		8.8		20.9	35.9	S		9.5	29	46.8	17.7	
9.5	38	11.7	13.0		9.5	2	15.4	37.3		9.5		44.2	44.1			8.4		29.2	12.1	B		9.5	32	8.3	47.9	
8.8		15.6	47.5	K	9.0		55.0	46.3	K	8.3		47.7	10.1	K		9.4		47.3	54.1			9.5	33	43.2	21.1	
9.5	39	1.1	26.0		8.8	3	7.8	30.5		8.9		51.9	23.8	B		8.0		56.0	11.6	K		9.5	34	19.1	43.7	
9.5		25.3	8.9		9.5		22.0	46.6		9.5	28	41.8	0.1	B		9.5	55	11.4	33.2			9.4	35	58.9	3.0	
8.8		32.6	55.4	K	9.4		29.0	29.4		9.0		45.6	50.2			9.5		11.5	59.6			9.2	36	10.8	15.2	
9.5		58.4	51.8		9.2		34.7	17.1		9.3		45.9	23.9	K		8.4		20.5	23.0	K		9.4		35.8	56.2	B
9.2	40	5.4	55.3	B	9.5	4	24.6	4.8	B	9.2	29	5.7	19.1	K		9.5	56	58.7	37.4			9.1		52.4	23.5	
9.3		29.7	40.2		9.3	5	2.4	35.0		9.2	30	23.1	59.5			9.5	57	46.1	34.0			8.5	37	5.8	46.9	K
8.6		29.8	2.0		8.8		55.6	53.8		9.2		28.7	38.5			8.5		50.9	22.7	B		9.0		25.3	34.1	K
9.5	41	9.2	50.2		9.5	6	1.9	16.5		9.2	31	20.6	51.6			9.0		51.2	52.3	B		9.2		50.5	42.3	
6.7		15.1	45.2	K	9.5		20.8	18.0		8.9		31.7	39.6			9.4	58	4.6	1.6	B		7.8		57.8	17.3	K
9.5		20.0	15.8		8.8		33.5	42.6	B	9.4		46.4	42.5			8.8		47.7	42.8	K		9.4	38	21.9	20.2	B
9.4		29.5	4.3		9.5		37.6	47.1		9.2	32	15.7	35.6	K		9.4	0	31.0	51.3			9.5		55.6	8.2	B
9.4		58.2	7.5		9.5	7	20.1	19.4		9.5	34	22.5	47.3			8.0	2	42.2	9.5	K		8.7	39	2.3	12.8	K
9.5	42	2.8	54.8		9.3		22.6	45.6	K	9.0	36	16.7	26.7	K		9.4		47.7	30.0			9.4		13.9	38.5	
9.5	43	29.9	58.6		9.5	8	2.4	9.5		9.5		19.5	59.5			9.0		50.4	57.1			8.5		21.3	25.2	L
8.4		52.5	3.7	K	7.4	9	17.8	36.6	K	9.2		21.7	27.8	K		8.7	3	5.7	17.8	K		9.5	40	0.4	24.7	B
9.5	44	40.4	3.0		8.9		41.6	9.0		5.2	37	48.7	27.9	K		8.5		8.0	15.4	K		9.5		5.0	19.7	

2301—2360					2361—2420					2421—2480					2481—2540					2541—2600				
	11ᵘ—12ᵘ		+31°			12ᵘ		+31°			12ᵘ—13ᵘ		+31°			13ᵘ		+31°			13ᵘ—14ᵘ		+31°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	40	10.4	2.7	B	9.5	17	20.2	25.2		9.1	47	48.2	47.4		9.4	16	52.7	12.8	B	9.4	40	8.0	38.0	
8.9		49.3	26.2	K	7.2		35.3	50.4	L	9.2		53.7	49.6	K	9.5	17	39.7	6.1	B	9.5		56.9	27.3	
9.1	44	45.9	32.2	K	9.1	18	11.2	23.7		9.2		54.5	16.3		8.9		40.5	18.7	B	9.4	41	8.9	34.3	
9.5		53.9	45.6	B	9.5		34.5	38.0		9.5	49	26.8	54.1		9.5	18	5.6	9.0		9.0		24.5	24.0	
9.5		57.4	41.9	B	9.3		40.2	23.4		8.1	50	25.8	9.8	K	9.0		15.6	29.5	B	9.5		35.3	25.0	
8.5	45	12.3	2.4	K	9.5	20	7.3	28.6		9.5		28.3	54.6		9.5	19	19.3	45.8	B	9.5		42.9	26.0	
8.0		22.5	37.3	K	9.3		48.8	7.9	K	9.5		54.0	12.3		7.5		22.9	27.8	K	5.5	42	6.0	54.7	B
9.5		41.6	30.3	B	9.3	21	10.4	54.8		8.8	51	17.7	47.4	K	9.4		49.8	12.7		9.4		6.3	0.9	B
9.5	46	21.5	3.7		9.5		26.0	36.5		9.1		31.7	26.6		8.6		57.2	34.4	K	9.1		40.9	38.7	
9.5	48	37.0	14.7		9.1	22	14.2	0.9		9.3	52	1.6	41.5		9.5	20	48.1	55.3		7.6		56.9	26.5	B
9.5		49.1	55.2		8.9		21.2	26.1	K	8.9		27.4	13.1		9.3	21	21.8	8.5		9.1	43	3.0	5.0	
9.5		53.5	26.4		9.5		49.3	31.3		9.4		40.7	48.4		9.3		31.9	0.5		9.5		10.8	23.9	
9.3	49	10.5	33.0	B	8.7	23	6.8	47.6	K	9.5	53	17.0	1.5		6.8		36.2	53.2	K	8.9		35.9	57.2	
9.5		14.3	36.8		9.1		19.8	51.3	K	5.2		22.5	33.8	K	7.3	22	13.3	18.3	K	9.3	44	43.5	45.2	
9.5	50	11.0	49.4		9.5		27.9	11.1		9.5		39.9	55.3		8.8		29.2	49.1	K	9.5	45	13.3	40.3	
8.7	51	20.7	56.6	K	9.3	24	5.8	7.4		8.7		55.0	17.8		9.2		41.4	30.2		9.0		44.7	39.0	
8.8		30.6	36.4	B	9.3		25.2	26.1		9.3	54	39.0	54.8		9.1	23	20.5	6.7		9.5	46	6.1	12.5	
9.5	52	24.6	21.2		9.2		29.2	49.3	K	9.3		47.3	28.4		9.0	24	12.5	16.9		9.4	47	32.0	36.1	B
9.5		28.7	27.8		9.5		44.0	15.3		9.0		49.9	56.8		9.0		16.7	26.2	K	9.5	48	2.9	54.8	
9.2	53	28.5	56.1		9.5	25	21.0	19.3		9.2	55	8.9	57.0		9.4	25	15.9	54.4		8.6	49	43.7	3.9	K
8.8		40.9	47.4		8.6	26	14.3	54.1		9.5		9.4	43.3		9.3		16.6	29.4	B	9.5	50	3.9	32.5	
7.4		48.5	27.1	K	9.5		27.8	51.8		8.0		25.9	8.0	K	9.5		29.0	54.5		9.5		12.3	43.5	
8.7	54	20.0	42.2	L	9.5		52.2	23.4		8.5		42.6	3.6	B	8.2		39.8	13.1	L	9.5		48.8	42.7	B
9.5	55	39.4	38.5	B	9.5	27	4.2	27.4		9.0		43.2	52.5	K	9.5		45.9	3.2		9.4	51	12.9	28.7	
9.5	56	28.6	28.7		9.0	28	0.3	52.0	B	7.5	56	55.1	48.4	K	9.4		50.2	33.0		9.5		18.4	17.3	
9.1	57	13.5	56.3		9.5		24.8	28.1		8.6		56.9	33.6	K	8.7	26	5.5	4.1	B	9.5	52	20.5	54.0	
8.1		42.0	37.7	K	9.2	30	5.7	13.3	B	9.2	57	1.4	26.5		7.3		6.3	29.5	K	9.4		51.9	24.3	B
8.9	59	23.8	3.5		9.5		14.9	57.3		9.0		2.4	14.1		9.1	27	35.8	28.4	K	9.5		58.1	24.9	
7.8	0	22.4	12.9	L	9.5		40.7	25.9		9.4		40.9	4.8		9.2		41.1	13.9	B	9.1	53	7.0	5.2	
9.3		25.5	58.9	B	8.3	32	6.6	22.7	K	9.2	0	6.9	53.2	K	8.8		53.6	3.8	L	9.5		25.3	49.2	
7.2		42.9	51.5	K	9.5		7.5	40.9		9.4		22.4	32.0		9.4	28	9.7	16.4		9.3		46.4	37.9	
7.2		53.0	3.8	K	8.8		24.7	48.4		9.4		35.4	26.2	B	9.5		10.0	17.2		9.4		49.3	18.4	
9.2		56.9	44.2	B	9.1		30.4	36.5	K	9.5	1	44.0	15.1		9.1		23.2	21.3	B	9.4	54	32.9	49.6	
9.4	1	24.4	44.7		9.4		47.5	32.5	B	9.5		47.3	57.4		9.4		26.8	29.6		7.6		34.0	22.8	K
8.8		47.0	49.8		9.4	33	7.4	34.0		9.4		52.5	27.6		9.1	29	30.7	12.1	B	9.3		51.4	9.1	
8.9	2	42.0	12.6	K	7.2		28.4	10.6	K	7.9	2	13.1	1.1	K	9.3		32.7	15.3		8.4	55	10.8	53.8	B
9.5		54.1	41.6		6.8	34	1.9	13.8	K	9.4		32.5	52.3		9.0		33.9	44.6		9.3		58.3	3.4	B
9.5	4	55.2	38.8		9.0		33.9	10.2	K	8.7		37.5	12.6	K	9.5	30	8.9	45.5		8.6	56	23.4	1.1	K
9.4	5	55.9	1.7		9.5	36	3.3	7.1		9.4	3	1.9	22.7	B	9.4	31	18.0	7.1		9.5		56.3	43.8	
7.4		56.8	5.5	K	9.4		10.6	18.5	B	9.1		19.0	29.7		9.5		41.3	32.1		9.5	58	8.9	12.2	
8.0	6	15.1	22.4	L	8.9		16.4	35.8	K	9.5		41.1	35.0		9.5	32	1.9	58.4		9.1	59	32.8	29.4	
8.3		15.7	46.4	K	9.1	38	4.8	53.3		8.8	4	22.6	37.5	K	8.3		31.0	50.5	K	7.2	0	1.0	33.4	K
8.2		50.0	37.8	K	9.5		56.1	45.2		9.0	6	55.8	9.2		9.3		41.8	2.5	B	9.5		4.0	1.0	
9.4	7	49.6	3.8		9.2	39	32.3	29.6		8.5	7	22.6	50.3	B	9.2	33	9.0	7.2		8.0	1	11.9	40.3	K
9.3		57.0	14.7		9.5	40	5.8	2.9		9.5	9	11.5	1.7		9.1		25.8	25.6		9.5	2	5.4	58.4	
9.4	9	5.0	59.7		9.5		11.9	12.6		8.1		25.5	40.3	K	6.0		40.3	44.8	K	9.0		28.7	17.7	K
9.5	10	17.9	56.3		9.3		40.2	0.8		8.9	10	20.0	51.2		9.1		45.3	12.8	B	9.5	3	8.4	11.4	
9.5		20.9	11.1		9.0		50.4	36.5		7.5		32.8	23.0	K	9.5	34	56.4	16.3		7.2		22.5	55.7	K
9.5	11	1.6	43.4		6.8	41	12.9	11.3	K	9.5		34.3	3.9		9.4	35	13.9	18.0		9.4		47.3	45.2	
6.5		13.0	3.7	K	7.0		21.4	33.3	K	9.5	11	51.2	35.1		9.4	37	15.7	59.9		8.6		55.4	38.4	B
8.9		37.0	16.5	K	9.4		47.3	52.3		9.5	12	1.4	11.3		9.3		27.3	2.2		9.5	5	21.7	13.2	
9.1	12	1.4	32.8		9.5		51.8	3.3		9.5		32.2	10.3		9.4		41.3	5.7		9.0		23.5	59.6	K
8.5		41.0	17.8	K	9.5	42	9.6	40.0		9.5	13	53.6	29.9		9.4		54.1	22.8		9.4	6	33.4	10.6	
9.5		41.6	3.7		9.5		24.9	13.6		8.6	14	52.4	16.8	K	9.3	38	14.5	40.7		9.1		59.1	40.7	B
9.5		55.7	2.1		9.0	44	54.9	10.1		9.1	15	12.1	48.6		9.3		21.8	33.8		7.2	7	25.1	53.0	K
9.5	14	23.4	12.6		9.5	45	10.8	51.3		9.5		24.0	59.3		8.3	39	6.9	19.8	K	9.4		25.9	40.6	B
8.3	15	31.4	36.0		8.9		33.8	54.6		6.7		27.8	3.2	K	9.0		30.9	46.9		9.1	9	2.0	57.0	
8.8		49.7	24.9	K	9.5	46	30.6	42.9		9.5		47.5	16.8		9.5		40.5	47.6		9.5		42.2	57.8	
9.4	16	32.0	15.0		9.5		42.0	59.8		9.3	16	7.9	42 3		8.3		41.8	11.3	B	9.0		57.0	54.5	K
9.5	17	4.4	35.0		9.1	47	8.3	28.6	K	8.9		42.8	17.4	K	6.3		42.4	36.3	K	9.5	10	5.3	17.8	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	14ᵘ	+31°			14ᵘ—15ᵘ	+31°			15ᵘ	+31°			15ᵘ—16ᵘ	+31°			16ᵘ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	10 49.6	57.4		9.5	42 51.5	50.6	R	8.8	13 6.1	13.4	B	9.4	42 12.8	57.5		9.5	13 51.9	55.9	
9.5	11 42.3	34.3	B	9.5	43 19.5	49.9		9.2	14 15.5	12.9		9.0	14.9	49.7		9.5	15 12.0	29.9	
8.6	13 1.2	17.5	K	8.9	51.1	9.9		8.9	52.3	27.2		9.5	49.0	25.1		9.3	33.3	23.0	
9.3	27.7	39.2	B	9.5	54.5	55.0		7.3	59.8	58.6	K	9.0	43 10.5	56.1		9.0	16 17.7	32.7	K
6.5	48.9	5.7	L	9.4	44 21.0	34.7		var	15 30.0	53.4		9.0	20.8	37.9		5.1	27.0	14.5	L
9.2	50.9	0.1	K	9.5	26.3	32.5		9.0	36.6	7.5	K	8.8	44 0.0	43.7		9.3	17 1.8	21.8	
9.4	14 6.7	21.4		9.3	39.5	51.2		8.9	49.2	24.5		9.5	15.1	20.2		9.2	23.7	10.0	K
9.0	10.0	48.7		8.3	42.6	2.7	K	9.5	16 8.5	30.3		9.3	15.2	12.2	B	9.4	18 17.2	2.0	
9.0	13.1	0.9	K	9.5	48.1	30.4		8.0	48.5	4.0	B	9.5	50.0	19.0		9.5	19 7.8	8.7	
9.3	16.2	21.6	B	9.4	46 34.5	19.6		9.4	17 45.0	21.4	B	9.0	45 28.7	23.8	K	9.5	20 40.5	16.8	
9.4	49.9	24.3		9.5	35.6	3.8		9.5	18 2.6	0.0		8.6	46 0.8	15.3	B	9.4	55.5	37.9	B
8.6	15 3.8	30.5		8.3	41.5	48.5	K	9.0	7.9	12.3	B	8.9	7.7	24.3	K	9.2	21 48.8	4.3	K
9.4	20.3	7.0		8.5	47 37.6	33.1	B	9.5	22.4	16.0		8.9	14.0	8.7		8.7	22 43.6	28.0	S
9.0	16 47.3	26.8		9.3	48 33.5	16.8		9.5	19 20.5	2.9		9.3	22.9	36.6	B	9.5	23 7.4	5.0	
8.9	17 57.2	7.1	L	8.3	49 34.0	14.0		9.5	25.0	30.4		7.8	47 30.5	40.9	K	9.5	17.3	6.3	
9.5	18 0.7	46.2	B	8.4	50 6.4	43.0	K	9.5	21 18.3	24.8		9.5	49 15.5	9.4		9.4	24 8.3	1.1	
9.0	50.3	43.9		9 5	51 2.1	27.5		9.5	43.3	40.4		9.3	50 1.4	57.3		9.1	20.4	32.3	
9.0	21 2.3	15.3		9.5	28.4	12.0		8.8	22 54.5	31.0		9.4	30.2	43.0		8.5	25 7.0	7.2	K
7.7	22 13.9	4.8	K	9.4	52 32.1	5.7		8.8	57.0	7.4	K	8.0	31.2	37.8	K	7.5	18.6	15.8	K
7.7	23 4.8	38.8	K	9.3	53 16.8	57.2		9.5	23 55.2	34.1		9.2	51 57.1	58.3	R	9.5	29.4	45.5	
7.5	11.3	18.4	K	9.3	54 8.5	32.3		9.0	24 7.0	27.5		9.4	52 10.0	3.5		9.5	26 13.5	35.6	B
9.5	22.5	54.3		9.5	17.8	52.4		7.0	33.0	47.5	K	9.1	45.6	34.9		9.3	14.1	19.2	K
9.5	52.7	57.9		9.5	48.5	7.8		9.3	42.8	11.4	B	9.5	53 23.9	10.7		9.5	27 29.8	44.9	
9.5	24 39.6	33.2		8.0	57.0	56.8	S	9.4	45.1	41.3	B	8.5	54 7.1	45.8	K	7.8	36.1	13.1	K
9.4	25 10.4	1.9	B	9.2	56 10.9	55.4	K	8.7	57.0	8.7	K	6.8	59.4	59.1	K	9.5	28 54.3	3.7	
8.5	24.1	22.7	K	9.5	26.1	2.7		8.8	25 2.7	22.1	B	9.5	56 29.7	41.5	B	8.3	29 31.1	23.8	
8.7	35.5	57.1	K	9.3	30.5	44.8		9.5	11.3	58.5		9.1	42.2	14.6	K	9.3	42.6	50.8	
4.0	36.3	0.4	K	9.1	49.5	15.4		9.5	32.6	6.5		8.5	57 53.2	34.8	K	9.4	57.5	6.3	B
9.4	26 22.0	7.8		9.5	58 17.0	16.5		9.1	26 48.8	58.8		8.9	58 13.7	25.6		9.2	58.4	51.3	
9.5	46.5	35.1		9.0	59 5.6	24.4	K	4.2	27 5.7	51.0	K	9.5	16.0	55.8		9.3	30 0.6	13.3	B
9.1	27 16.0	46.0		9.5	16.6	29.7	B	9.4	14.9	42.5		9.5	46.4	51.0	B	9.3	9.0	4.2	B
8.5	57.6	37.1	K	9.5	23.8	24.4		9.5	28 25.0	13.8		9.2	59 29.5	38.0	B	9.4	26.9	3.9	B
9.4	30 33.6	57.1		9.4	34.7	4.8		9.5	32.8	36.2		9.5	33.9	50.0	B	7.2	50.8	15.3	K
9.0	38.0	58.4		9.4	35.5	42.3		9.5	29 40.0	1.8		7.3	50.6	57.9	K	9.5	58.0	58.3	B
9.4	31 13.2	55.5		7.8	47.2	37.1	K	9.3	57.2	18.6		8.2	55.7	16.8	K	9.1	31 9.6	24.5	K
9.0	14.0	51.8	K	8.4	0 19.5	44.7	K	9.3	30 26.7	13.9	B	9.4	1 23.8	51.6		9.3	29.8	45.1	
9.4	16.6	25.0		8.8	20.5	50.1		9.3	39.5	16.4		9.5	2 6.1	56.6		9.2	36.6	30.3	K
8.3	32 38.5	22.9	K	9.3	58.6	40.2		9.1	54.1	7.4	K	9.5	3 12.2	38.2		9.3	53.1	37.8	
8.5	33 2.0	44.3		9.4	1 5.5	51.2		9.3	31 1.3	9.5	B	9.5	40.0	22.4		9.0	32 15.6	22.5	K
9.5	18.6	0.2		9.4	13.8	27.8		9.5	50.7	15.6		9.0	41.5	14.8	K	9.5	24.3	10.8	
9.5	32.5	55.4		9.1	25.9	20.8	B	9.5	34 38.2	27.5		9.0	45.2	13.6	K	9.5	54.8	56.2	
7.5	34 6.2	3.7	K	8.4	2 30.6	30.5		8.6	46.5	56.1	K	9.3	48.1	31.3		9.3	33 21.7	50.9	B
7.7	16.2	9.0	K	9.5	3 40.2	29.5		9.5	35 11.2	11.0		9.5	4 36.8	8.6		9.3	34 29.1	27.2	
7.7	33.8	55.0	K	9.5	4 28.9	56.3		8.8	58.1	23.4	K	9.4	47.2	34.4	B	3.0	35 50.9	52.2	K
9.1	35 7.8	56.1	K	8.8	46.4	23.7	L	9.3	36 5.0	55.8		8.7	56.1	21.4	K	9.2	58.1	33.1	
9.1	8.0	19.9		9.5	50.4	52.0		9.2	7.4	26.1		7.7	5 12.8	20.4	K	7.4	59.2	9.2	K
8.5	57.9	46.4		8.2	52.5	12.9	K	9.5	42.5	1.3		9.5	6 6.3	58.8		9.2	36 14.6	42.8	
8.5	37 9.2	19.9	K	9.1	57.6	59.1		9.5	37 4.8	19.7		9.1	17.8	48.5		9.5	16.9	10.8	
9.2	38 25.5	35.0		9.5	6 30.1	56.9	B	9.5	6.4	7.0		9.2	35.5	2.0		9.3	19.8	6.9	K
9.5	40.5	13.7		9.5	48.9	57.1	B	8.9	25.7	19.5	B	9.1	40.7	12.5	K	9.5	29.8	33.0	
8.3	55.2	8.2	K	8.8	50.7	52.4	K	7.2	27.1	51.2	K	8.3	41.5	49.8	K	9.2	37 2.0	29.5	K
9.4	39 17.7	56.4	B	9.3	9 38.0	24.2		9.5	29.7	44.0		9.3	7 2.3	25.5	B	8.4	17.4	56.0	L
9.3	20.6	23.0	K	8.9	10 16.0	27.0	K	9.5	38 15.2	13.2		9.3	6.2	18.9		9.4	51.5	5.8	
9.5	35.5	28.5		9.5	27.5	37.7		9.2	40 33.7	52.4		8.5	43.4	36.1	K	9.5	38 2.2	54.3	B
9.3	41.5	34.3		9.5	37.3	17.0		9.4	35.2	13.5		9.0	49.5	56.7		9.3	37.1	26.5	
8.2	40 23.2	15.0	B	9.5	38.3	19.7		8.7	43.4	43.7		9.5	9 43.8	0.2		9.4	46.2	33.7	
8.8	27.5	47.9		9.4	11 49.6	48.2		8.6	41 3.8	16.9	L	9.4	13 4.3	19.3		9.5	39 2.9	15.4	
8.5	40.5	23.4	K	9.3	12 3.3	5.0	B	9.5	9.2	58.3		9.5	25.7	26.5		9.5	19.3	29.3	
9.3	56.1	36.8		7.0	3.8	21.1	K	7.3	20.0	1.0	K	9.0	37.4	52.8	K	8.4	37.1	56.2	K
9.5	42 37.6	36.8		9.5	42.7	16.9		9.5	37.1	12.1		9.4	50.5	0.4		9.5	40 22.6	33.4	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	16ᵘ	+31°			16ᵘ—17ᵘ	+31°			17ᵘ	+31°			17ᵘ	+31°			17ᵘ—18ᵘ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	40 26.4	23.3		9.2	59 59.9	34.2		9.5	20 41.4	44.3		8.7	36 27.0	42.8	K	9.4	54 55.5	30.8	B
9.5	38.3	31.9		8.5	0 3.7	18.5		9.5	42.1	52.9		9.5	37 7.6	52.9		9.5	55 12.9	59.6	
9.4	41 1.0	39.2	B	9.5	51.7	26.6		9.1	43.9	6.6	K	9.5	23.5	42.9		9.0	33.2	45.1	K
9.5	52.5	13.4		8.2	1 21.8	13.3	K	9.4	56.5	17.3		9.4	38 35.9	1.0	B	9.4	42.4	16.3	
9.1	58.7	52.8	K	8.5	33.8	16.2	K	9.1	21 16.4	10.8	K	8.1	39 0.6	44.6	L	9.3	46.4	8.7	
9.1	42 2.4	45.2		9.5	35.2	36.8		6.8	16 9	23.5	L	8.8	1.2	6.4	K	9.5	49.0	3.4	
9.5	9.2	57.2	B	6.8	2 29.3	24.2	K	8.0	17.4	12.1	K	7.5	21.8	12.1	K	9.5	56 19.7	1.0	
8.5	20.6	51.5	K	9.5	3 5.1	27.9		9.3	37.2	58.5		9.4	23.1	51.5		9.3	23.3	9.4	
9.5	58.4	21.8		9.2	5.1	44.2	K	8.8	45.9	37.6	K	9.0	48.2	49.5		9.1	34.4	33.1	
9.0	43 13.1	43.2		9.5	5.7	35.8		9.3	52.0	57.2		6.5	40 12.6	34.3	K	9.5	57 11.4	57.1	
8.9	21.1	30.5		9.5	4 20.4	57.1		9.0	53.9	34.9	K	9.2	28.7	1.1		8.7	16.0	55.1	B
9.2	25.4	45.7		9.5	42.7	25.2		9.5	22 5.7	59.3		9.3	41 3.5	46.4	B	8.0	41.0	56.7	K
9.1	44 25.9	8.0	K	9.4	50.8	1.9	B	9.3	21.5	54.0		9.4	9.5	50.7		9.5	58.8	2.5	
9.5	53.8	32.8		9.5	56.0	30.4	B	9.3	41.8	59.8		9.4	9.7	46.5	B	9.5	58 15.8	28.3	
9.5	45 14.1	29.8		9.3	59.1	12.9	K	9.4	50.9	39.4		9.4	12.9	49.1		9.2	45.7	27.7	R
9.0	21.9	41.6	K	9.5	59.5	37.7		9.2	59.5	3.6		9.5	29.3	58.5	B	9.5	47.6	32.8	
9.4	40.4	58.9		7.5	5 26.2	22.4	K	9.2	23 3.3	44.5		9.2	46.6	15.1	K	9.1	54.1	28.0	K
9.5	52.4	25.5		9.4	36.6	47.2		9.2	18.1	44.3		9.5	43 10.1	23.7		9.5	57.2	8.3	
9.4	56.7	17.7		8.1	39.6	9.4	K	9.4	26.7	8.2	B	9.3	30.8	3.8		9.5	59 3.9	40.7	
9.0	58.6	36.9	K	9.2	6 37.3	47.5		8.5	34.3	46.5	K	7.7	44 22.8	5.0	K	9.1	12.5	11.0	
9.0	46 4.8	3.0	K	9.5	39.8	49.4		9.3	34.5	59.2		9.3	26.5	36.7		9.4	27.3	58.8	B
9.4	6.8	28.3	B	9.5	48.6	16.7		9.4	36.7	7.9	B	9.0	37.6	32.9		9.5	30.7	13.8	
9.0	14.6	46.7	K	9.0	8 32.8	9.7	K	9.1	24 6.5	19.3	B	9.1	58.5	38.8		9.2	0 18.7	15.6	
9.1	16.5	54.5		9.4	47.7	7.7		9.1	12.5	42.8	K	9.1	45 8.6	59.1		9.0	29.1	42.7	
6.2	47 30.9	56.8	K	8.8	9 3.1	7.5	K	9.5	22.3	51.0		9.5	23.3	35.7		8.9	33.7	29.7	
9.5	45.0	14.0		9.2	32.6	14.2		9.5	59.0	38.6		9.0	50.6	14.7	K	9.0	56.6	3.6	
8.7	48 20.6	23.8	K	9.2	44.2	10.8	K	5.8	25 26.5	16.6	K	9.1	46 5.1	9.3	K	9.1	1 2.1	26.2	
9.4	26.2	8.4		9.2	10 19.0	2.7	K	9.4	28.3	36.9	B	9.5	23.2	56.7		8.2	26.4	45.1	L
9.5	44.1	45.5		9.5	29.2	43.9		9.5	49.2	58.0		9.4	26.3	26.7		9.5	37.7	54.9	
9.3	49 35.6	47.8		9.2	51.8	59.0		9.0	26 14.6	8.1	K	8.6	32.1	9.5	K	9.5	55.4	36.1	
9.5	50 20.1	16.6		9.2	11 44.7	26.6		9.3	46.0	32.2		9.3	38.5	29.9		9.5	2 11.0	0.4	
8.0	51.9	14.6	L	9.3	52.6	5.9		9.3	55.8	24.0		9.4	59.7	0.6		9.2	19.5	43.6	B
8.9	51 9.6	4.8	L	7.5	58.8	40.4	L	9.5	27 13.1	45.8		9.4	47 0.2	46.1	B	9.5	24.4	21.7	
9.5	52 3.7	40.3		8.5	12 8.1	35.9	L	9.4	28 11.0	30.6		9.0	13.0	24.4	K	9.5	25.1	31.0	
8.9	12.8	22.1		9.2	13 22.2	48.8	K	9.3	29 56.8	8.9	K	8.2	26.0	0.9	K	9.5	31.1	42.6	B
8.6	24.6	13.5	K	9.2	23.8	44.5	K	9.3	30 28.8	32.3		9.0	42.9	45.3		9.2	31.7	24.5	
9.0	40.6	20.1		9.2	32.1	3.6		8.7	31 26.7	51.0	K	9.1	45.9	6.8	K	8.8	35.7	29.4	
9.0	42.9	30.8		9.2	14 31.5	21.4		9.0	35.2	34.6	K	9.5	48 3.5	27.5	B	9.1	36.2	42.1	K
9.0	52.5	58.4		9.1	35.7	47.9	K	9.3	43.2	29.5		8.8	3.6	51.1	K	9.4	48.7	17.2	
9.1	55.1	12.0		9.2	41.5	56.3	K	9.0	43.2	34.2	K	9.1	6.3	30.5	K	8.0	3 7.7	26.2	L
9.5	53 26.6	35.9		9.5	59.8	28.3		9.3	48.5	24.7		9.5	56.5	30.9		8.8	25.0	44.8	B
8.0	28.1	41.8	K	9.2	15 15.2	13.5		8.6	50.5	16.1	K	9.5	49 33.0	49.0		9.3	26.9	57.1	
9.5	48.5	57.8		9.5	37.5	9.1		9.1	57.6	53.6	K	8.6	39.1	21.2	K	9.0	31.6	45.0	B
9.3	54 12.6	41.1	K	7.5	46.2	23.8	R	9.0	32 12.5	7.5		9.2	41.2	35.5	B	8.9	33.7	39.7	
9.2	21.1	4.4	K	9.0	16 6.3	57.4		8.7	36.5	5.8	K	9.5	52.0	8.5		9.5	34.1	0.8	B
9.0	33.4	9.3	K	9.1	36.0	10.0	B	9.2	36.5	28.4		9.5	50 8.1	41.8		9.3	42.6	27.8	B
3.5	45.6	8.7	K	9.5	47.0	23.0	B	9.5	51.5	42.6		9.4	22.6	35.7		9.5	49.4	13.6	
9.5	48.7	1.8		9.4	17 28.1	9.1	B	9.3	33 12.2	24.0		9.5	23.3	27.8		9.0	55.8	42.8	K
9.2	49.1	18.6		9.3	47.8	41.1		9.4	22.9	42.5		9.1	24.6	21.5	K	9.5	4 3.5	11.3	B
9.0	55 54.1	41.0		8.7	53.6	5.7	K	9.3	38.3	49.1		9.3	50.1	8.9		9.2	5.4	35.8	K
8.6	57.7	26.8		9.3	56.7	18.1	B	7.7	44.3	57.8	L	9.1	52.0	56.5	B	9.4	36.7	37.9	
9.3	57 16.1	1.1		9.3	18 8.4	48.0		9.1	59.8	0.6	K	9.2	51 0.1	39.8		9.1	54.1	21.4	
8.0	24.4	54.2	K	9.5	45.1	15.5		9.1	34 8.5	36.1	K	9.2	3.0	11.9		9.5	5 13.6	2.4	
9.5	58 8.8	22.8		9.3	50.3	7.1		9.5	26.2	33.5	B	9.4	26.6	24.7		8.8	18.7	57.8	
9.5	41.6	46.6		9.5	52.2	17.4		6.5	27.9	17.1	K	9.2	26.8	31.5	K	9.5	28.8	22.5	
7.6	59 3.6	36.9	L	9.4	54.0	27.8		7.0	35 13.2	23.6	K	9.5	37.0	40.3		8.2	30.4	12.5	K
9.3	35.3	3.0		8.8	54.4	17.7	K	8.3	21.0	21.2	K	9.5	58.1	47.1		9.5	49.2	12.0	
8.6	55.1	12.9		9.3	19 37.4	41.7		9.5	36 3.8	59.9		9.3	52 57.7	13.0	R	9.5	6 17.7	49.6	
9.3	57.8	57.1		9.5	43.2	44.5		8.7	11.5	41.6	K	9.5	53 25.4	25.9		5.0	25.7	21.8	K
9.5	59.8	44.5		9.0	50.9	15.9	K	9.5	19.5	34.7		9.5	54 2.9	39.7		9.4	40.2	54.4	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ	+31°			18ᵘ	+31°			18ᵘ	+31°			18ᵘ	+31°			18ᵘ—19ᵘ	+31°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	6 48.5	4.6		9.0	18 47.7	10.1	K	8.0	33 12.6	19.7	K	8.8	46 24.3	47.3		8.2	57 11.1	12.5	K
9.5	7 4.3	37.0		9.4	50.4	51.4		9.4	31.4	39.3		8.5	25.4	12.8	K	8.9	23.8	29.1	
8.5	6.7	31.1	K	9.2	19 34.0	4.2	K	9.4	34 38.8	58.4		9.5	47 7.1	22.1		9.4	49.5	50.1	
9.2	19.2	45.3		9.5	40.1	32.8		8.0	39.7	32.4	K	8.5	17.4	13.9	K	9.3	49.6	11.8	K
9.2	20.1	31.8		8.0	20 20.5	50.1	B	9.5	49.1	18.0		9.5	23.6	21.5		8.5	51.8	28.1	K
9.5	28.3	15.2		8.3	23.4	14.9	K	9.4	58.1	34.2		8.7	35.4	15.9	K	9.5	58 34.4	10.6	
9.0	32.7	27.4	K	8.9	29.3	59.6		7.7	35 1.3	29.8	K	9.2	51.5	36.6	K	9.0	43.9	57.0	
9.5	51.4	32.8		9.0	43.5	40.9		9.0	20.8	33.2	K	9.5	55.5	47.8		8.2	49.5	8.8	K
9.1	8 21.7	43.1	K	8.0	52.8	31.1	K	9.3	21.6	1.5		9.2	58.8	43.8	B	9.5	59 4.2	35.5	
9.4	25.8	12.7	B	9.2	21 16.3	35.1	K	8.7	23.7	24.6	K	9.5	48 10.8	11.1		9.5	8.9	57.7	
8.1	39.7	27.3	L	7.8	46.9	54.1	K	9.5	30.5	4.2		9.5	14.9	58.7		9.5	20.5	15.2	
9.5	40.1	0.2	B	7.7	22 19.1	6.8	K	6.5	36 13.5	28.6	K	9.5	35.9	48.5		9.3	23.4	37.9	B
9.5	51.1	50.6		9.5	23.4	29.3		9.5	34.0	23.7		9.4	36.5	11.0		6.0	26.6	31.8	L
9.4	9 1.7	42.4		9.1	41.4	31.4	K	9.5	34.8	12.5		9.5	42.3	31.5		9.3	27.8	58.0	
9.1	5.8	56.2		8.7	43.2	35.8	K	9.5	45.9	32.8		9.5	49 17.3	22.2		8.8	28.9	22.9	K
9.1	10.6	26.6	L	9.3	23 24.8	1.6		9.5	48.3	50.0		9.2	20.0	51.9		9.4	40.2	43.1	
9.1	12.2	33.0	L	9.5	33.3	2.1		8.9	51.8	59.4		9.3	26.5	58.3		8.0	40 3	13.3	K
9.3	18.2	33.4	B	9.2	24 17.6	4.5		9.2	37 3.7	16.6	K	9.3	32.3	9.0		9.2	53.0	21.0	K
9.3	19.8	23.6		8.2	19.0	45.4	B	9.2	4.4	24.5		9.0	50 0.8	14.7	B	9.0	0 10.2	16.8	K
9.4	52.3	44.5		8.9	20.7	7.0		9.3	10.0	10.4		9.0	6.2	1.1		9.3	25.9	22.9	
9.2	52.7	40.0		8.3	52.6	30.1	B	9.5	22.5	5.5		9.2	9.9	14.4	B	9.5	48.7	9.6	
9.2	10 0.8	21.8		8.7	25 27.7	8.4	K	9.4	25.7	53.1		9.3	28.6	18.0		9.5	49.1	45.1	
9.3	18.0	34.1		9.5	37.4	52.4		9.5	32.7	34.3		9.5	33.1	50.4		9.5	54.9	13.9	B
9.1	56.3	24.1	K	9.5	26 6.0	13.5		8.5	36.2	52.0		8.6	42.5	32.4	B	9.3	55.0	21.2	K
9.5	11 11.4	17.6		9.5	38.1	31.7		9.3	42.7	40.5		8.7	51 4.8	5.7	K	8.9	55.6	30.9	K
9.1	32.8	7.9		9.5	27 26.4	33.8		9.1	50.8	22.4	K	9.0	15.8	15.5		9.5	1 11.8	27.5	
9.1	42.4	31.0	K	8.6	32.7	29.6	S	8.9	38 15.9	32.4		8.8	17.7	0.7	K	9.3	2 10.7	42.2	
9.5	53.4	47.5		9.5	38.8	53.4		5.5	25.8	47.2	L	9.3	22.9	22.8		9.4	19.5	3.0	
9.5	58.5	47.2		9.1	38.9	44.5		9.3	30.9	32.5		9.1	24.1	34.5		9.5	19.9	34.0	
9.2	12 28.5	58.4		9.4	28 18.4	55.8		9.0	32.9	13.6	K	8.5	25.8	11.3		9.1	26.3	43.2	B
9.5	35.7	24.5		9.4	28.8	1.5		8.5	34.1	19.1	K	7.4	36.6	48.7	B	9.5	38.4	58.2	
8.9	13 0.1	57.3		9.1	28.9	20.0	K	9.4	39 21.6	47.5		8.2	37.0	56.9		9.4	39.7	29.8	
8.9	3.1	7.6	B	9.5	41.7	25.5		9.2	23.2	50.3	K	9.0	45.7	59.5		8.4	3 0.5	49.8	L
9.5	15.5	6.6		9.5	56.0	53.0		9.5	38.2	29.6		9.3	52 4.5	26.1	B	9.5	21.1	33.0	
9.4	22.6	54.0		9.5	57.0	45.8		9.5	43.0	16.2		8.6	6.4	57.1		9.3	21.1	19.3	
9.4	48.0	27.7	B	9.0	29 3.7	39.9	K	9.5	48.5	1.7		9.5	36.9	55.2		9.5	26.9	51.5	
9.3	14 7.1	10.3		8.4	4.7	36.3	K	9.5	53.6	39.3		9.1	53 7.9	19.3	K	9.5	4 11.1	31.3	
9.3	10.5	57.7		9.3	35.4	11.9		9.4	55.2	58.6		9.3	10.0	29.7		7.6	41.0	48.8	L
8.0	20.3	4.9	K	9.0	53.5	52.0	K	9.2	40 14.0	20.3	B	8.2	45.4	30.1	K	9.4	54.6	3.0	
9.5	38.0	53.0		8.8	30 7.1	28.7		9.2	26.5	55.1		9.0	52.9	26.0	K	9.5	55.4	8.2	
9.5	15 2.1	9.7		9.3	7.7	58.6		9.1	41 2.0	7.2	B	9.5	54 4.1	37.0		9.5	5 0.3	31.3	
8.0	5.7	0.3	K	9.3	13.2	5.6	K	9.0	15.2	22.6		8.8	11.5	29.5	B	9.5	3.3	31.1	
9.5	13.1	44.8		9.5	24.3	59.9		9.5	26.3	31.6		9.2	28.8	36.5	K	7.3	12.9	23.8	L
9.1	13.5	30.0	B	9.4	33.8	5.7		9.5	27.6	55.3		5.8	32.8	56.6	K	9.5	13.0	30.8	
9.4	23.8	0.7		9.0	31 23.0	57.5		7.3	43.5	13.7	S	9.0	42.2	10.1	B	8.0	13.3	5.1	B
9.5	26.2	53.6		9.5	49.5	40.0		9.3	48.8	12.1		9.5	55 11.8	48.0		9.5	15.8	31.3	
9.5	42.4	44.0		9.4	50.7	2.7		9.0	51.3	1.1	K	9.5	30.8	29.1		8.5	15.9	52.7	
9.0	43.9	12.7	K	9.4	52.4	8.2		9.0	42 9.0	14.7		9.5	31.0	17.1		9.1	16.9	3.9	B
9.5	54.4	35.4		9.1	58.9	4.7	K	6.0	29.8	36.0	L	9.4	36.1	58.3		9.5	25.1	8.1	
9.3	54.6	17.6	B	9.5	32 9.7	40.6		9.3	33.5	14.7		9.4	44.7	6.2		9.2	35.9	20.0	B
9.5	16 10.7	53.5		8.5	26.8	27.6		8.5	43 40.5	25.4		9.0	56 1.6	7.9	B	9.5	51.0	21.5	
9.5	21.7	42.7		9.5	27.4	34.9		9.5	44 0.4	38.7		9.5	10.4	58.0		9.4	54.8	27.6	
9.5	23.7	49.6		7.7	27.8	11.6	B	7.0	15.8	28.3	L	9.5	14.4	50.8		9.3	57.8	16.1	B
9.4	17 2.3	0.7		8.9	31.6	9.8	K	9.2	27.0	29.9		9.1	32.1	57.2		9.4	6 1.6	13.5	
9.5	17.8	56.8		8.7	46.0	12.9	K	8.8	34.7	37.9	B	9.2	42.5	2.2		8.9	4.3	13.5	K
9.5	52.8	52.2		9.5	57.3	22.1		8.9	45 13.5	11.1	K	9.2	47.8	42.1		9.1	12.6	57.9	
9.4	56.3	6.2		9.1	33 3.0	43.6		8.9	20.6	18.8	B	9.2	48.5	44.9		6.0	12.8	2.7	L
9.5	18 1.7	57.9		9.0	5.5	34.2		9.0	42.2	19.6	K	9.3	50.8	50.7		9.4	47.0	3.8	
8.0	26.4	17.0	K	9.4	5.7	37.9		9.5	42.5	55.2		9.2	57 2.1	37.3		9.2	47.4	56.1	B
9.1	42.1	23.5		8.5	11.3	3.2		9.5	57.8	3.5		9.4	10.4	34.1		9.4	49.5	45.8	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ᵘ	+31°			19ᵘ	+31°			19ᵘ	+31°			19ᵘ	+31°			19ᵘ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	6 55.8	4.4		9.5	16 7.3	40.3		9.5	23 55.2	51.7		9.1	30 55.7	25.4	K	9.4	38 28.5	2.9	
9.2	7 4.3	20.3	B	9.5	14.8	53.7		8.1	55.5	4.6	K	9.5	58.5	45.3		9.3	36.6	17.6	
9.5	14.8	26.8		8.4	38.0	51.8	B	9.2	59.4	59.0		9.2	31 14.5	0.8		9.4	43.9	33.6	
9.5	14.9	38.5		8.5	17 0.1	4.1	K	9.3	24 6.2	0.9		9.5	19.5	10.5		9.4	51.1	47.4	
9.1	15.9	51.3		9.4	1.0	21.7		8.1	23.1	53.8	B	8.5	26.8	43.8		9.0	57.9	36.0	
9.0	20.4	54.8		8.9	3.3	14.2	K	9.5	23.4	36.6		9.5	33.6	19.6		9.5	39 4.0	45.9	
9.3	25.3	19.9		8.2	8.0	27.5	S	9.5	32.6	16.3		7.8	38.8	34.6	B	9.4	8.0	3.4	
9.3	34.4	11.1		9.5	17.4	10.5		9.5	50.0	41.5		8.2	52.9	35.5	K	9.3	19.8	31.8	
9.5	48.2	29.9		9.5	30.8	36.0		9.5	55.7	20.3		8.9	56.7	9.6	B	9.0	24.7	30.1	
9.5	50.3	52.8		8.0	31.9	23.1	B	8.4	59.9	34.3	K	9.4	32 1.7	2.6		9.5	28.4	40.0	
9.5	8 18.4	10.1		9.5	45.2	55.7		7.5	25 1.8	40.2	K	8.1	9.9	25.4		9.4	37.2	53.6	
9.3	31.7	38.8	B	9.5	49.7	16.7		9.1	19.1	1.5	K	9.5	12.1	49.4		7.3	37.9	4.5	L
9.4	9 15.4	42.4		8.6	50.8	13.2	K	9.2	34.8	28.1		9.5	25.5	43.7		9.5	46.1	45.6	
7.0	17.9	36.5	L	8.6	18 0.8	55.4		9.5	36.1	46.1		7.5	40.8	25.5		9.4	47.8	29.1	
9.5	49.4	38.1		9.5	7.5	18.0		9.2	40.2	50.0	K	8.8	47.4	33.3		9.5	49.3	57.3	
8.4	10 23.1	58.7		9.4	11.0	41.6	B	9.4	45.1	42.4	B	8.8	49.5	12.3	K	9.5	56.5	11.4	
8.2	24.0	32.4		8.9	12.4	1.8		9.5	50.6	25.8		9.2	53.3	30.3		9.4	40 2.3	59.3	
8.7	27.3	12.5		9.4	29.2	15.3		9.2	51.2	52.5	K	9.3	33 5.5	20.7		9.5	3.2	53.6	
9.5	34.6	31.5		9.5	36.5	31.8		9.5	57.7	25.8		8.8	8.0	40.2		9.5	14.0	40.2	
9.4	34.8	35.5		9.4	39.3	49.4		9.3	26 3.6	7.7		8.2	13.8	30.1		9.3	25.2	56.3	
9.3	50.2	43.6		8.8	46.4	38.5	K	9.4	4.3	18.7	B	8.5	14.2	13.3		9.5	32.0	23.1	B
9.4	11 6.1	5.1		9.5	53.1	29.5		9.5	11.1	56.0		9.1	21.0	5.6		9.5	33.5	4.0	
9.5	15.5	54.8		9.0	19 1.0	22.7		8.2	13.9	33.3		9.5	23.7	24.9		9.5	34.6	14.5	
9.5	22.6	3.9		9.5	3.8	11.8		9.5	32.5	36.5		9.1	35.8	16.3		9.4	36.9	36.2	
9.2	46.9	11.4		9.5	14.0	6.3		9.1	34.0	43.9		9.5	37.0	41.2		7.2	40.1	45.6	K
8.7	52.2	42.8		9.5	18.6	5.7		9.4	39.5	11.3		9.5	38.6	13.0		9.3	41.3	59.9	
9.1	53.4	2.5	B	8.2	21.5	31.3	B	8.8	49.6	14.3		9.2	41.9	37.3		9.2	41.4	40.8	B
9.3	55.0	3.5		9.3	47.3	35.5		9.1	57.1	2.2	B	8.7	44.9	32.4		9.5	52.0	5.8	
9.3	57.3	11.3		9.4	58.7	43.4		9.5	27 7.5	8.4		9.5	34 7.5	11.6		9.4	41 5.4	2.6	
8.2	12 0.1	18.5	K	9.5	20 3.6	2.7		8.8	11.6	21.2		9.4	12.2	53.6		9.4	17.2	44.1	B
9.1	10.3	12.3	K	9.4	43.0	49.8		9.4	20.8	36.5		9.0	21.8	28.0		9.5	19.2	49.3	
9.5	11.0	47.3		7.9	58.6	2.5	K	9.4	34.7	14.7		9.5	28.0	47.7		8.1	42.4	4.6	K
9.5	20.8	22.2		9.2	21 0.5	0.3		8.9	34.9	33.0	B	7.6	35.9	43.3	B	9.5	45.8	58.4	
9.1	33.6	59.7		9.0	2.3	39.1		9.1	51.6	33.5		9.4	39.0	39.3		9.0	56.1	48.3	
8.8	48.2	42.2		9.5	3.2	49.7		9.4	52.5	10.4		8.5	43.4	1.7	R	8.1	59.8	26.3	
9.4	50.6	5.1		9.5	25.0	56.0		9.4	58.9	37.8		8.5	59.6	11.6		9.4	42 7.5	10.1	
9.5	13 5.6	2.9		9.5	25.1	17.7		9.5	28 11.0	31.5		7.1	35 3.0	4.6	K	9.1	16.1	46.0	
8.3	8.9	25.4		9.4	29.0	54.0		9.3	13.1	47.2		8.4	10.7	52.1		9.4	17.1	48.0	
8.9	12.7	57.8		9.5	32.0	48.1		9.3	20.8	5.7		8.7	15.8	45.2		6.5	20.5	8.7	K
8.5	15.1	29.1	K	9.1	32.4	55.0	B	9.4	26.6	54.6		8.7	32.6	14.9		9.1	23.5	0.3	
8.9	19.8	54.0		9.3	32.6	7.7		9.5	30.0	2.7		9.5	58.8	29.8		8.8	24.1	44.7	
9.4	47.4	11.2		9.1	36.7	58.1		9.5	35.4	38.3		7.8	36 22.5	9.3	K	9.1	32.1	45.7	
9.4	49.1	27.6		9.1	53.2	30.5	K	8.8	38.7	20.5		8.1	29.5	11.8	K	9.4	32.5	2.6	
7.1	55.2	42.2	K	9.5	56.2	35.2		9.1	56.2	11.7	B	8.9	34.8	29.6	K	9.5	37.7	22.7	
9.0	58.1	19.7		9.5	22 37.0	20.4		9.3	58.5	12.4		9.4	43.6	14.5		8.8	43.6	22.2	
9.2	14 9.0	42.2	K	9.3	44.2	15.2		9.0	29 12.2	50.8		9.5	46.9	33.6		8.5	52.4	17.0	K
9.5	15.8	57.0		9.5	46.7	57.7		9.2	19.9	40.0		8.3	50.7	24.7	K	8.7	57.1	13.0	K
9.4	35.5	36.0		8.1	23 3.1	2.8	K	9.3	24.8	4.7		9.5	37 4.4	1.2		9.5	58.7	26.4	
9.1	41.0	47.8		7.5	10.1	46.9	L	9.0	27.9	2.1		9.5	7.6	34.5		9.5	43 1.0	42.9	
7.0	54.6	49.9	L	7.8	11.6	2.4	K	9.2	40.5	17.2	B	9.4	17.9	35.1		9.1	16.0	39.7	
9.3	15 1.9	48.7		9.5	18.0	32.8		9.2	30 1.9	6.8		9.4	28.8	59.5		9.3	19.0	27.6	B
9.4	2.5	4.3		9.0	25.1	19.2		8.8	10.0	3.0		9.3	31.5	43.0		9.5	20.0	26.4	
9.4	7.2	15.8		9.5	28.5	1.3		9.5	12.0	21.0		9.5	45.3	58.1		9.5	20.7	53.1	
8.6	7.9	49.8	B	9.4	35.4	8.9		9.4	16.8	30.5		9.4	46.7	21.6		9.5	25.0	58.5	
8.9	14.2	5.9	B	9.5	39.3	0.4		9.2	18.3	31.3		8.2	47.9	37.0	K	9.0	27.8	49.6	
9.5	36.9	1.1		9.5	44.8	41.5		9.1	20.1	2.0	B	9.4	57.4	5.9		8.9	42.7	24.9	K
9.5	54.1	4.5		9.5	45.2	35.6		9.4	28.1	5.0		9.0	38 1.3	58.3	K	9.1	49.5	5.7	
9.3	56.4	32.9	B	7.0	46.5	19.5	K	8.0	35.6	12.5	B	7.8	4.0	43.7	K	9.4	44 10.9	35.3	
9.0	16 1.3	23.2		9.4	48.1	4.0		9.5	38.9	32.8		9.5	5.2	52.3		9.2	14.8	30.6	K
9.3	5.0	24.2		9.3	53.1	6.5	B	9.5	53.1	31.8		8.8	17.8	31.6		9.5	24.9	36.0	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ᵘ	+31°			19ᵘ	+31°			19ᵘ—20ᵘ	+31°			20ᵘ	+31°			20ᵘ	+31°	
m		′		m		′		m		′		m		′		m		′	
9.0	44′ 37.0	5.2	K	9.4	52′ 33.7	49.6	B	8.6	58′ 30.5	44.8	B	9.3	5′ 26.4	32.6		8.9	14′ 42.8	58.3	
9.2	38.4	7.9	K	9.1	38.1	23.9	B	9.3	34.8	42.8		8.5	28.9	6.4		7.2	44.7	33.8	K
8.8	42.2	51.6	K	9.3	39.0	24.8		8.1	35.7	31.7	L	9.5	37.6	9.4		8.8	15 12.7	35.4	K
8.4	50.5	11.6	K	8.4	43.4	5.2	K	8.3	46.2	22.4		9.5	6 2.5	30.4		8.5	29.2	6.5	
9.2	45 15.5	8.6	K	9.5	52.6	40.7		6.0	55.2	48.8	K	9.4	19.7	44.9		9.4	30.5	4.3	
9.5	24.8	28.4		9.4	53 2.7	9.9		9.0	59 2.6	38.0	B	9.2	29.2	25.3	K	7.9	46.6	51.2	K
9.5	31.4	38.5		9.3	6.1	44.7		9.5	6.8	52.0		9.4	33.0	27.2		9.3	47.5	29.0	
9.5	35.6	17.5		9.1	10.8	27.4		9.3	7.0	57.2		8.0	34.6	38.9	K	7.6	51.8	59.8	K
9.3	46 2.3	29.1		9.3	12.9	34.3		9.1	11.7	34.7		9.4	35.0	38.4		9.5	16 2.7	6.6	
9.2	6.6	7.7		9.0	13.8	13.5	K	8.8	14.7	46.0	K	9.5	37.7	51.0	B	9.5	9.6	54.5	
9.3	9.0	38.5		9.4	16.0	57.9		9.3	26.0	51.4		8.8	7 2.6	52.9	K	8.9	25.1	55.5	
9.4	18.1	4.3		9.5	21.5	4.5	B	8.6	45.6	33.6		9.5	4.0	47.0		9.5	29.8	59.3	
7.6	19.0	13.6		9.5	23.4	9.5		9.5	52.1	22.3		9.5	18.4	42.3		8.6	32.0	51.1	
7.5	20.1	20.2	B	9.4	24.4	10.4	B	9.5	54.2	49.6	B	9.5	25.5	12.9		8.5	37.2	51.1	
8.4	28.7	25.4		9.5	41.9	55.8		9.5	0 3.2	22.3		8.9	38.3	58.5		9.5	52.5	45.0	
9.3	33.9	17.3		8.3	43.0	42.7		9.2	19.7	59.8		9.5	56.0	38.7	B	7.0	56.9	4.9	K
9.4	38.6	15.8		9.3	49.6	17.0		9.5	24.5	5.4		9.5	57.5	0.8		8.0	17 20.3	58.7	K
9.5	47.6	26.1		6.9	58.2	25.7	K	9.5	28.7	59.0		9.1	8 9.4	17.9		8.1	29.8	2.7	K
9.5	49.0	26.7		8.1	54 11.7	26.9	K	8.7	33.8	22.9		8.7	21.7	7.8		8.7	33.8	35.6	
9.5	58.6	17.3		9.2	12.4	28.8	B	9.5	35.0	56.5		9.5	26.9	17.2		8.5	39.6	56.3	K
9.4	47 1.2	47.7		9.4	29.7	43.6		9.5	39.6	12.7		7.0	29.7	32.8	L	8.0	52.2	12.6	K
8.8	2.9	35.0		9.4	52.9	58.3		9.2	53.4	32.2		8.8	30.9	54.5	K	5.0	18 4.5	43.0	K
9.2	12.3	20.5		9.5	55 0.2	17.1		9.1	58.7	40.4	-	8.0	37.8	3.1		9.0	15.2	37.6	
9.1	18.6	15.5	K	9.3	0.7	6.0	K	9.0	1 1.7	39.3		8.7	49.8	41.1	K	9.5	19.6	58.1	
9.5	28.9	2.9		9.5	13.9	57.1		9.5	18.8	36.8		9.5	51.0	45.3		9.3	35.2	38.6	
9.5	37.8	41.3		9.4	19.0	27.1	B	8.9	21.3	52.1	K	8.5	9 8.1	6.0	K	9.5	37.3	8.2	
9.2	38.8	29.1		9.2	38.4	54.6		9.0	26.4	43.5		9.5	39.0	48.5		9.5	40.0	30.7	
9.4	40.6	13.8		8.8	40.7	7.5	K	9.5	34.6	54.6		9.3	10 4.1	50.0		9.1	44.7	32.7	
9.4	48 8.2	54.6		8.9	41.8	22.3		9.5	41.0	26.9		8.8	4.9	53.7		8.6	45.8	44.5	K
8.9	25.5	5.7		9.1	46.1	41.5		8.9	41.7	8.2	B	9.0	9.5	34.4		9.4	51.9	21.5	B
9.5	25.6	56.6		8.8	48.2	43.3	B	9.5	48.8	42.2		9.5	9.6	25.7		9.5	57.4	34.1	
9.3	37.1	47.7		9.3	54.2	56.1		9.3	49.2	35.0		8.6	14.2	29.2	K	9.0	19 1.7	10.9	
9.5	38.7	23.0		9.5	59.7	45.3		8.0	2 0.6	39.7	B	8.9	15.5	54.1		9.5	9.8	1.1	
9.3	42.7	43.1		9.5	56 0.0	47.8		9.5	7.4	18.6		8.7	21.7	28.7	K	9.3	16.7	12.4	
8.9	52.1	42.0	B	8.4	9.7	14.7		9.3	8.1	42.8		9.4	23.0	44.7		7.8	17.6	59.9	L
9.4	57.9	32.4		9.2	22.5	49.0		9.3	9.8	2.5	B	8.0	11 1.0	39.6	K	8.8	18.5	30.1	K
8.8	49 1.8	27.5		9.1	26.6	45.5		9.4	15.5	55.4		9.2	3.0	4.0	K	9.1	19.7	6.4	
9.5	3.5	3.5		9.0	29.7	4.5		9.3	30.2	42.4	B	7.2	4.5	56.1	K	9.4	20 25.8	1.3	
9.5	12.9	37.8		9.5	31.0	29.4		9.2	34.3	25.5	B	9.1	5.1	50.0		9.0	26.2	0.6	
9.5	22.5	11.1		9.3	37.8	1.4		9.5	35.3	27.4		6.5	7.6	3.7	K	9.2	28.9	25.4	B
8.5	35.7	22.9		8.7	38.2	12.8		9.5	40.8	49.6		9.5	9.9	40.9		9.4	52.4	5.1	
9.2	36.6	7.7		9.5	45.1	3.7		8.7	43.7	41.3		9.5	10.7	44.5	B	9.4	56.2	2.3	
8.8	44.6	14.8		9.1	52.2	3.2		9.4	44.2	43.7		9.3	14.5	22.5		9.5	21 7.5	28.2	
9.5	54.2	52.6		8.8	57 4.2	17.8		8.1	53.9	7.4	B	9.2	23.2	6.5	K	9.2	8.0	20.8	
9.4	56.5	4.7		6.7	7.0	33.4	L	9.0	58.3	2.7		9.4	46.7	7.5		9.4	23.5	33.2	
9.3	50 0.5	12.2	B	9.3	22.4	38.6		9.5	3 23.0	58.8		9.5	48.0	5.5		9.5	31.7	25.7	
8.6	9.7	20.2		8.0	29.7	30.8	B	9.5	29.8	55.0	B	8.8	59.7	41.0		9.5	32.1	29.4	
9.4	28.0	46.4		9.3	30.7	36.9		9.2	32.4	48.0		9.1	12 2.0	3.7		9.3	32.4	13.0	
9.5	37.3	24.9		9.1	32.8	32.9		9.3	49.1	5.0		7.0	38.7	39.5	L	9.0	38.7	16.1	B
9.5	46.4	7.4		9.5	33.2	38.8		9.5	55.9	52.7		9.5	51.2	59.0		9.3	44.8	22.8	B
9.5	52.9	33.3		8.4	49.6	51.9		9.0	56.6	36.2		9.4	53.7	58.7		9.5	47.9	39.5	
8.0	51 2.0	38.7		9.5	51.9	7.9		8.6	4 9.5	42.6		9.3	57.5	48.5		8.8	50.2	55.1	K
9.5	21.1	45.6		8.9	52.7	55.4		9.4	37.7	15.9		7.0	13 44.8	35.5	K	9.5	55.4	22.9	B
9.4	21.3	30.8		9.0	57.0	25.3		9.5	38.2	58.4		9.5	57.5	36.8		9.2	22 9.7	40.2	
9.4	21.5	12.1	B	8.2	58 0.9	20.4		8.3	38.7	34.4		9.5	14 1.3	36.0		9.2	14.7	51.2	B
9.5	50.3	2.2		9.0	2.7	27.1		9.3	58.0	53.6	B	9.0	3.2	14.0	K	9.3	20.9	23.4	
9.2	52 22.1	44.7		9.5	7.7	12.2		9.4	5 6.8	8.2		9.4	8.0	36.5		9.4	29.3	2.2	
9.1	26.6	16.3		9.4	17.0	56.2		9.3	8.7	3.5		9.4	12.8	33.4	B	8.5	37.4	44.7	K
9.5	27.4	30.4		8.8	28.4	16.5		9.5	17.9	22.8		9.5	15.1	31.9		9.3	53.6	11.3	
9.5	28.2	54.9		9.5	28.7	21.4		7.5	22.5	51.6	K	9.2	37.5	38.0		8.9	23 1.0	29.4	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵘ	+31°			20ᵘ	+31°			20ᵘ	+31°			20ᵘ—21ᵘ	+31°			21ᵘ	+31°	
m		′		m		′		m		′		m		′		m		′	
9.3	23′ 6.1	45.2		8.2	31′ 53.9	53.1	K	7.8	41′ 48.0	22.8	L	8.7	51′ 20.5	54.9	B	9.4	1′ 24.6	17.1	
9.5	8.4	24.5		9.0	56.7	53.9	K	7.8	51.1	8.2	K	9.4	32.6	14.4	B	9.5	36.6	56.2	
9.4	11.9	13.4		9.2	58.3	7.0	B	9.1	54.7	29.9		9.3	43.7	37.6		9.1	37.4	31.2	B
8.8	18.0	27.5		8.6	32 2.1	29.4		9.0	56.3	42.3		9.5	47.3	28.1	B	8.3	48.2	30.9	K
9.1	28.4	12.4		8.1	8.2	15.5	K	8.5	42 1.0	36.6		9.1	53.2	6.5		8.6	2 7.9	32.2	K
9.4	37.8	19.3		8.5	18.0	34.3		9.5	48.6	27.2		9.4	53.6	55.4		9.5	16.2	22.7	
9.5	49.3	51.9		8.8	25.8	28.6	K	9.5	43 7.9	16.5		9.4	52 2.8	8.2		9.0	21.1	12.1	
9.4	56.3	39.6	B	9.5	27.9	47.5		9.3	9.9	17.3	B	9.4	14.9	48.0		9.0	41.6	51.7	
9.5	24 0.5	43.2		9.5	33 4.4	46.6		9.5	12.1	57.5		9.2	19.7	54.2	K	9.2	52.7	4.0	
9.1	15.0	52.9		9.5	7.8	55.0		8.3	24.4	45.5	K	9.4	29.3	4.6		9.4	3 6.2	21.9	
9.5	35.2	7.5		9.3	8.4	10.8		9.4	26.2	2.1	B	9.0	33.0	51.3	K	9.3	7.1	27.0	
9.5	39.8	35.2		8.9	45.7	6.0	K	9.5	28.7	7.3		7.0	42.7	5.4	L	9.3	18.6	23.0	
9.5	39.9	22.1		9.5	34 1.0	49.1	B	9.5	55.0	15.1		9.5	47.2	53.5		9.1	19.4	14.7	
9.5	25 4.0	57.0	B	8.8	31.7	23.0	K	9.4	44 0.5	48.5		9.2	49.8	2.2		9.5	42.3	40.8	
9.5	17.6	28.4	B	9.5	37.1	21.3		9.5	4.8	16.9		9.4	53 1.6	44.6	B	9.4	43.4	0.6	
9.5	28.1	21.9		9.0	44.2	55.6		9.5	14.5	39.9		9.0	2.6	10.8		9.4	43.4	8.6	
9.5	50.9	48.0		9.5	47.0	36.6		9.5	34.9	25.3		8.1	3.5	40.5		8.4	54.1	54.0	K
9.5	26 1.8	26.9		9.4	53.7	55.4		9.1	50.2	3.6	K	8.6	14.7	20.2	B	7.2	59.6	37.8	K
9.5	6.8	24.2		9.5	55.4	9.7		9.5	45 0.4	41.1		9.2	18.1	59.9	K	9.5	4 0.8	15.3	B
9.5	9.0	7.2		9.5	58.8	9.2		9.5	10.0	2.1	B	9.1	31.0	37.8		9.5	1.7	11.7	B
9.5	10.1	23.5		6.0	35 10.7	47.5	S	9.5	18.3	59.8	B	9.3	33.5	47.0		9.1	6.8	38.5	K
9.4	44.7	12.2		9.1	28.6	21.6	K	9.5	33.0	37.6		9.2	41.6	59.8	K	9.4	8.7	4.6	B
9.5	47.4	4.8		9.2	37.4	18.1	K	9.5	39.2	42.3		9.4	54 0.2	5.0		9.4	9.2	15.3	B
9.5	56.6	5.0		9.3	36 11.0	39.6		9.5	46 9.1	54.9		7.0	1.6	56.2	L	9.0	25.3	41.4	K
8.0	27 11.2	14.6	K	9.4	20.9	10.9		9.5	27.4	37.4		9.4	5.3	56.4	B	9.5	31.3	1.1	
7.6	13.5	10.2	K	9.4	28.2	56.3		9.5	36.3	15.9		9.5	6.7	46.3		9.5	37.0	40.6	
9.3	23.4	41.1		9.5	34.4	49.2		8.1	49.7	11.0	L	9.5	35.2	37.9		9.4	39.6	4.1	
8.9	40.7	46.7	B	9.5	36.6	54.4		9.0	51.4	54.7		9.4	41.2	42.8		9.5	39.6	54.5	
8.5	40.9	24.8	B	9.4	43.5	9.7		8.5	57.6	15.9		8.0	46.8	36.4	L	9.1	59.7	58.0	B
9.5	41.3	20.1		9.5	44.0	51.7		9.5	47 4.0	4.5		9.5	54.4	6.0	B	9.4	5 44.2	35.6	
9.4	44.3	42.3		9.5	49.4	15.6		9.2	19.8	48.5		9.2	57.8	21.8	B	9.5	46.1	54.5	
9.5	55.6	24.0		9.0	56.1	39.1		9.4	24.1	37.9		9.4	55 23.9	36.9		9.3	49.0	51.0	
8.6	28 2.6	41.6		9.2	57.3	1.6		9.4	27.0	34.2		9.5	35.4	36.9		9.4	51.9	56.0	
8.6	7.4	35.0		8.7	37 1.2	23.1	K	6.7	33.7	5.0	L	9.2	40.5	35.4		9.4	6 2.1	2.3	
9.5	14.0	16.7		9.3	2.5	13.2		9.5	38.5	48.0		9.5	50.9	58.4		9.5	23.2	34.6	
9.3	28.2	52.8		9.3	6.2	30.5		9.1	48.7	20.9	K	8.7	57.2	40.3	L	9.4	26.2	41.6	B
8.5	34.6	3.6		9.5	28.4	5.8		9.3	49.2	33.7		9.5	56 15.6	30.4		8.2	27.0	26.2	K
9.3	40.6	57.9		9.3	29.3	35.7		9.5	57.0	18.2		9.2	22.9	30.6		9.5	28.1	37.6	
9.0	45.5	37.6		9.5	34.6	30.5		9.4	57.9	8.1		9.2	45.7	11.1		9.4	36.1	16.7	B
9.5	52.9	22.6		9.5	36.0	41.1	B	9.5	59.8	50.1		7.2	55.8	46.9	K	9.1	42.9	43.1	
9.5	29 0.3	38.7		9.2	38.5	36.2		9.5	48 27.3	35.0		8.2	57 10.4	25.6	K	9.3	7 1.4	46.0	
8.5	0.7	57.9	L	9.3	38 8.1	35.4		9.3	46.5	52.8		9.5	23.9	8.4		9.5	6.7	39.0	
8.2	10.2	32.3	L	9.5	23.9	21.4		9.3	46.5	25.6		9.2	27.6	54.3		8.9	45.0	49.3	
9.4	15.1	58.4		8.0	31.1	10.4	L	9.5	49 10.6	57.9		8.4	58 18.4	26.3	K	8.3	8 1.7	24.3	K
9.0	22.1	19.4		9.5	40.4	32.1		9.5	18.2	26.5		8.1	19.3	5.8	K	9.1	9.1	11.3	
9.2	25.6	26.8		8.6	44.8	20.0	L	9.5	41.6	14.2		9.5	35.4	3.6		9.4	34.3	24.4	B
9.5	56.4	22.1		8.5	47.9	46.2		7.8	45.7	36.9	L	9.3	46.6	53.7		9.5	9 6.0	13.8	
9.4	59.0	41.1		9.5	39 4.4	34.8		7.6	54.8	32.7	L	9.3	56.7	18.0		8.7	12.3	52.6	K
9.5	30 26.4	42.7		9.5	11.8	29.5		9.5	58.5	21.3		9.0	59.9	12.8		9.3	26.7	21.5	
9.1	40.3	18.4		8.0	17.7	14.6	K	9.4	50 3.6	25.3	B	9.4	59 23.9	48.2		9.5	29.7	31.1	
9.3	45.1	58.0		9.5	58.4	6.0		8.9	10.7	48.8	K	9.5	33.0	12.1		9.4	34.5	9.7	
8.6	56.4	56.9	K	9.0	40 5.8	39.3		9.4	17.0	24.9		9.1	43.4	40.0		9.5	41.9	17.0	
8.7	31 4.2	11.7		8.2	14.1	45.2	K	9.5	19.1	34.9		9.5	43.6	57.6		7.3	43.4	27.6	K
7.1	8.5	51.2	K	8.8	24.2	26.4	K	9.5	20.0	9.0		9.2	45.0	52.5		9.5	57.0	41.5	
9.3	14.7	46.6	B	9.5	33.7	3.4		9.5	21.6	58.9		9.5	0 17.4	33.5		9.3	10 8.3	39.9	
9.4	16.7	41.4		8.9	37.8	26.2	K	9.2	28.4	53.4		9.3	17.8	2.5		9.5	8.6	6.3	
9.5	17.9	2.6		7.2	54.3	53.4	K	9.3	42.5	22.5		8.7	27.3	51.9	K	9.4	12.7	20.8	B
7.5	36.0	32.9	L	8.8	41 7.8	37.3		8.7	43.3	49.7	K	9.5	37.4	18.2		9.2	16.4	37.6	
6.2	37.9	4.0	K	9.3	12.3	2.0		8.5	43.8	2.3		9.5	50.6	42.9		9.3	41.2	13.8	
6.4	38.8	1.0	K	7.7	13.7	38.1	L	9.2	51 3.0	15.1	K	7.5	1 20.8	55.1	L	9.5	11 3.3	8.4	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ʰ	+31°			21ʰ	+31°			21ʰ	+31°			21ʰ—22ʰ	+31°			22ʰ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.7	11 5.2	33.8		9.2	21 53.1	12.8		9.3	32 48.9	52.6		9.5	49 34.5	8.6		9.5	2 48.3	22.0	
7.8	14.4	17.6	B	8.8	57.4	35.4	K	8.2	55.5	3.1	K	9.1	50 6.9	47.8		8.1	57.0	28.7	K
8.8	15.0	27.1		9.5	22 7.0	29.2		8.8	33 1.9	22.7		9.0	7.0	21.7	K	9.4	3 7.4	13.8	
9.5	17.3	3.3		9.0	17.8	1.6		9.5	16.3	43.3		9.3	21.6	33.0		7.8	39.9	38.3	K
9.0	22.3	22.0		9.5	18.2	10.2		9.2	34 6.9	32.3	B	9.5	32.8	27.8		7.1	49.5	35.1	K
9.5	26.0	48.3		8.4	37.2	40.3	K	8.9	36.7	57.9	K	7.7	33.0	9.5	K	9.0	4 2.3	53.5	
9.5	12 11.7	51.8		9.5	39.1	24.3		9.2	56.3	53.2		9.5	41.3	7.5		7.7	58.5	22.4	B
9.0	13.3	31.8	K	9.5	47.1	58.3		9.3	35 7.7	57.9		9.4	41.5	16.1		9.3	5 3.8	53.9	
9.4	27.4	30.8		8.6	47.2	54.9	L	8.8	31.9	25.4	K	8.2	56.1	59.6	K	9.0	8.3	5.8	K
9.5	36.4	7.9		8.9	51.1	45.2	K	9.3	40.5	55.4		8.7	57.6	12.1	K	8.8	19.8	50.4	
9.4	39.1	13.7	B	9.0	23 26.5	31.9	K	9.5	36 2.3	52.3		9.5	51 14.3	4.4		9.1	27.9	55.5	
9.4	42.2	40.3		8.4	38.3	28.0	K	8.3	11.5	12.7	K	9.5	24.2	33.8		9.5	41.0	19.1	
9.4	43.8	47.9		9.5	45.0	53.5		9.5	22.9	32.3		9.5	51.4	11.3		9.3	6 45.4	25.1	
9.5	50.7	26.0		8.7	48.4	35.5	K	9.0	49 4	8.9		9.0	52 0.1	59.0		9.0	7 2.9	22.3	
8.5	51.7	51.0		9.1	24 3.7	58.6		9.4	54.5	18.9		9.1	29.5	56.8		9.2	14.7	26.8	
7.3	52.1	34.9	K	9.5	9.5	52.3		8.8	37 29.1	3.3	K	9.5	33.1	14.1		9.0	16.2	31.0	
9.5	13 5.9	33.8		9.5	17.4	39.9		9.5	44.6	12.0		7.5	37.0	46.5	K	9.0	18.3	48.8	
9.5	49.3	51.6		9.5	19.5	46.8		9.5	38 8.5	0.1	B	9.5	53 16.2	57.8		9.2	22.1	28.8	
9.5	53.5	8.4		9.0	25.3	57.6		8.9	34.3	4.5		9.3	27.9	57.8		8.9	24.9	45.7	
9.5	54.4	53.6		9.5	34.5	48.9		8.5	47.9	18.6	K	9.0	29.0	43.6		9.3	25.8	38.8	
9.0	14 20.1	28.0		7.0	35.4	20.1	K	9.5	55.6	44.7		9.0	39.1	51.5		9.2	26.9	32.3	B
9.5	27.6	58.1		9.5	35.9	45.0		9.5	39 2.7	10.2		9.4	54 18.8	26.5		8.5	28.0	12.7	K
9.2	37.1	3.5		9.3	45.0	27.9		9.0	13.8	55.4		9.3	18.8	28.3	B	9.5	31.7	28.3	
9.3	42.0	59.5		9.5	54.5	17.6		9.5	35.3	45.0		9.2	32.9	57.2		9.3	47.4	43.4	
6.7	43.8	50.9	L	9.4	59.4	8.8		9.4	40 3.7	56.1		9.5	40.3	40.3		9.5	55.9	16.8	
9.1	15 24.4	5.5		9.5	25 12.6	8.1		9.4	25.2	51.5		9.5	51.4	20.3		9.2	8 15.3	18.9	
9.5	46.8	7.9		9.5	26 0.4	35.4		9.4	41.6	33.0	B	9.5	53.0	31.2		9.5	9 55.7	26.1	
9.4	48.0	12.0		9.3	1.9	46.5		9.4	41 8.9	10.6		9.5	55.8	5.0		7.3	10 1.4	53.9	K
9.4	49.1	49.6		9.0	3.5	0.6		9.5	17.8	5.2		9.1	55 45.9	13.8		9.5	15.6	29.0	
9.5	16 11.7	1.5		9.2	6.4	24.3		9.2	42 0.1	3.6		9.1	50.7	26.1	B	9.5	19.4	35.4	
8.5	24.0	20.9	K	9.4	26.1	43.4		9.5	3.4	56.4		9.5	56 7.5	29.3		9.0	36.2	22.4	
8.3	52.5	24.8	K	9.5	56.1	47.1		9.4	30.9	55.8		9.5	26.5	27.8		8.5	52.9	33.7	K
9.1	57.7	6.5	B	9.5	56.4	7.0		9.4	56.8	40.2	B	8.8	42.5	9.9	B	9.2	11 27.6	55.2	
9.5	17 11.7	56.6		8.6	27 6.6	1.5	K	9.5	43 1.3	3.1		9.5	57.7	36.1		9.5	33.2	10.1	
8.8	16.8	39.7		9.5	7.8	36.8		9.3	30.7	19.6		9.5	57 42.3	55.1		9.3	36.9	18.9	
9.5	55.2	33.0		8.5	34.7	47.7	K	7.2	45.1	9.5	L	9.5	58.3	44.7		9.2	57.5	0.2	
8.6	18 10.7	9.0	B	9.3	28 21.4	15.0		9.0	59.3	22.7		8.6	58 15.2	20.7	K	9.3	12 2.6	17.4	B
9.5	14.7	11.2		9.5	31.2	25.4		6.7	44 13.2	58.8	K	9.5	24.4	5.8		9.5	10.4	54.6	
9.2	23.6	25.0	K	7.0	47.5	8.5	K	8.4	34.5	59.1	K	9.5	40.3	4.0		9.5	58.5	54.6	
8.9	25.0	16.2	K	9.5	29 41.7	39.2		8.4	36.0	58.8	K	9.2	40.7	59.9		9.0	13 46.1	30.5	K
9.5	52.7	48.0		9.5	59.2	44.6		9.5	45 15.2	55.9		9.2	49.5	56.7		9.5	14 4.4	36.0	
9.3	19 1.0	2.5		9.5	30 5.3	24.9		7.5	24.3	13.4	K	9.3	50.3	12.7		8.5	22.0	45.7	K
8.6	13.7	33.2	K	9.5	12.8	55.2		9.3	31.4	58.0		9.2	51.5	54.7		9.3	49.2	48.4	B
9.5	18.8	13.2		7.8	19.4	27.2	K	9.5	34.5	48.5	B	9.1	59 3.4	4.8	K	9.4	51.3	58.0	
9.5	25.1	27.0		7.7	22.5	47.7	K	9.4	50.9	16.8		9.1	11.5	19.9	B	9.5	15 22.4	15.6	
9.3	50.0	8.8	B	9.0	32.4	39.1		9.5	57.6	38.5		9.2	14.9	40.8	B	9.5	32.7	4.6	
9.3	20 11.5	44.5	B	9.3	34.1	24.4		9.4	46 18.8	7.0		8.9	15.1	14.1		8.8	17 7.8	50.9	
9.4	14.0	38.7		8.8	57.0	30.0		9.1	39.6	21.3		9.2	20.7	28.3		9.5	36.9	53.4	
9.2	17.5	1.9		9.3	57.7	2.4		9.0	51.5	23.3		9.5	48.3	54.9		8.0	18 4.4	44.0	K
9.0	27.6	20.5		9.0	31 22.0	9.2		9.5	47 9.1	47.1		9.5	0 9.4	53.0		8.8	14.9	44.4	K
8.8	31.4	30.7		9.3	28.0	53.0		9.5	47.4	55.9		9.4	17.6	49.5		8.6	40.5	49.6	K
8.5	32.5	15.8	K	9.4	35.1	4.3		9.1	48 1.6	33.3		9.2	18.2	57.3		9.4	43.5	26.3	
8.6	36.0	33.9	L	9.2	39.7	28.9		8.8	21.5	23.3	B	9.3	18.8	4.3		9.5	58.0	30.8	
8.5	21 4.0	5.3		9.5	54.7	28.8		7.6	21.5	39.2	B	9.0	23.9	37.5	K	9.4	19 10.8	36.8	B
9.5	9.0	52.5		9.4	32 0.8	5.0		7.2	26.5	59.8	L	9.1	1 1.8	39.5		9.5	18.6	32.3	
9.4	11.2	45.6		9.5	3.3	13.6		9.5	26.7	24.3		8.8	24.2	18.9	K	9.1	21.6	42.3	K
9.0	18.0	23.3		9.2	4.3	7.0	B	6.8	33.1	39.3	B	9.3	38.0	52.3		9.5	56.9	4.4	
9.3	18.5	21.1		9.1	7.0	47.2		9.3	33.8	7.1	B	9.5	46.3	7.1		9.5	20 6.5	9.2	
7.9	34.3	9.2		9.5	15.2	38.3		9.4	35.3	46.8		9.2	50.0	19.5		9.5	36.4	29.1	
9.5	50.4	52.8		9.5	29.2	27.5		8.3	37.3	34.4	L	9.5	2 33.5	52.8		9.0	38.0	16.2	

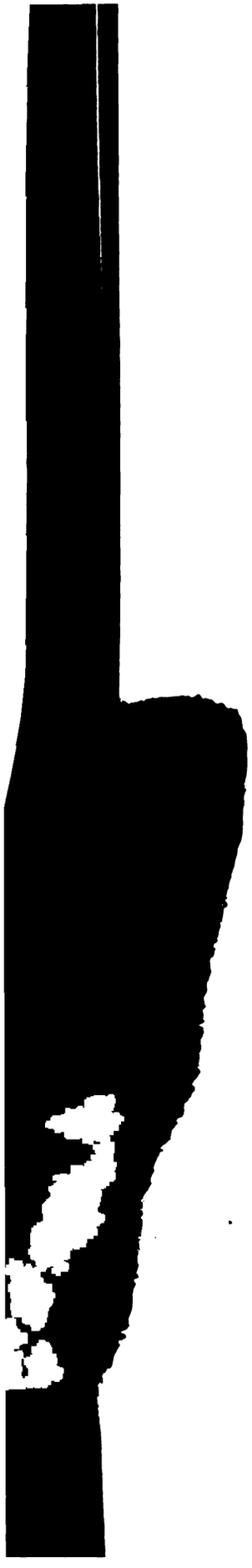
4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
	22ᵘ	+31°			22ᵘ	+31°			22ᵘ—23ᵘ	+31°			23ᵘ	+31°			23ᵘ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
6.2	21 9.1	5.7	K	9.5	34 42.0	5.3		8.6	52 45.8	28.3		9.5	10 58.6	46.8		8.8	30 29.9	39.6	
9.5	21.9	11.4		9.4	59.4	55.4		9.5	53 8.8	5.0		9.1	11 1.1	6.7		8.8	58.9	48.9	B
9.3	44.5	0.8		9.1	35 15.0	44.7		9.3	39.4	21.7		9.5	1.8	36.2		9.1	31 53.0	15.7	
9.1	22 33.4	44.0		9.3	16.2	7.2		9.1	59.1	36.1		9.5	32.7	54 2		9.5	54.4	35.7	B
8.2	42.5	6.9	B	8.3	36.2	9.5		9.3	54 26.0	4.6		9.5	33.0	47.1		9.0	32 11.9	45.4	K
9.5	23 6.4	2.4		9.4	38.9	41.9		7.4	40.7	50.0	L	9.5	12 13.1	22.1		8.8	24.2	39.7	K
8.5	15.3	26.4		9.5	53.3	46.6		7.8	55 2.0	55.3	K	9.5	16.2	19.7		9.3	24.8	46.9	
6.0	22.9	49.9	L	9.5	36 4.2	18.9		9.2	22.5	2.6	B	9.5	28.3	20.4		9.0	31.3	32.2	B
9.3	27.1	4.8		9.4	23.2	3.7	B	6.3	39.7	0.0	K	9.0	13 5.4	55.5		9.4	33.4	50.6	
9.2	35.7	58.9		9.4	48.3	21.4		9.3	56 23.2	46.2		9.5	6.6	14.2		9.3	33 22.2	37.5	
8.8	37.8	15.2	K	8.3	55.8	29.3		9.5	41.0	59.2		9.4	10.8	20.6	B	8.8	31.7	49.1	B
9.0	45.9	54.6		9.5	37 5.1	48.0		9.2	57 3.1	24.7	B	9.1	24.1	42.6		7.0	34 4.2	45.1	K
9.3	24 9.4	30.2		9.5	19.9	8.2		8.9	4.8	14.1	B	8.8	56.6	59.5		9.3	15.4	59.3	
9.4	42.1	36.0		9.5	38 15.6	14.0		8.5	6.0	43.6		9.5	14 2.2	20.1		9.3	18.9	21.3	
8.7	45.2	11.6		9.5	23.9	56.9		9.5	6.5	4.2		9.4	18.0	0.6		8.8	59.7	39.6	
8.2	47.5	6.5	K	9.3	39 17.7	5.4		8.0	8.0	21.0	K	9.5	19.1	48.2		9.5	35 10.2	34.8	
9.3	25 13.5	24.5		9.5	29.3	37.6		9.5	17.8	47.8		5.8	52.2	1.2	K	9.4	38.5	55.3	
9.0	13.8	38.7		9.5	30.9	3.4	B	9.4	56.3	40.6		9.5	57.3	41.6		9.5	43.6	18.5	
8.5	15.7	52.0	K	9.1	40 22.3	18.6		9.1	58 29.9	56.5		9.5	15 4.5	13.9		9.4	47.7	41.2	
9.5	19.0	27.5		9.5	41.8	41.0		9.3	59 11.5	41.7	B	9.5	57.9	31.2		8.8	36 2.8	33.8	K
9.2	26 19.4	55.6		8.8	47.1	12.0		9.5	12.4	57.3		6.7	16 42.0	43.0	K	9.3	31.9	57.9	
9.5	29.0	36.7		9.5	48.3	20.6		9.5	59.7	5.8		9.5	17 41.9	28.5		9.3	33.8	46.8	
8.8	37.2	13.5		9.5	41 35.8	17.2		8.8	0 6.5	12.8		8.8	43.8	19.7		9.4	55.3	20.2	
9.5	44.4	55.5		8.8	56.5	31.0		9.2	15.0	43.4		6.0	45.9	35.0	K	9.5	58.0	44.0	
9.2	27 44.1	49.3	B	8.8	58.8	52.9		9.5	24.7	2.5		8.9	18 13.4	39.0	K	8.5	38 5.9	23.0	K
9.4	58.4	50.5		8.8	58.9	55.6		9.0	33.6	17.0	B	9.0	45.4	12.4	K	9.5	15.5	6.0	
9.4	28 1.8	47.5	B	9.3	42 30.7	51.9		9.0	39.8	55.3		9.5	19 51.5	53.4		9.0	39.4	20.3	
9.0	2.3	30.3	B	7.8	34.3	46.0	K	9.0	49.7	24.6		7.9	54.6	43.3	K	9.0	39 51.3	2.1	
9.5	13.1	48.5		9.5	43.1	33.3		9.2	55.5	36.3		9.5	20 4.9	0.2		9.1	52.6	4.1	
9.5	24.2	53.3		9.5	43.3	23.5		9.4	1 11.0	42.4		9.3	12.1	55.6		9.5	40 19.2	47.9	
8.8	24.4	13.2		9.5	44.5	39.8		9.4	18.9	35.0		9.3	16.2	43.0		9.0	46.8	48.5	K
8.8	59.9	30.8		9.5	43 16.9	43.1		9.5	2 11.0	18.7		9.0	16.5	45.1		8.3	41 39.3	13.4	L
8.3	29 27.6	48.5	K	8.0	49.6	41.6	L	9.1	14.1	12.1		8.9	21 2.2	2.8		8.5	42 17.4	45.5	K
9.5	30 12.9	0.6		9.3	44 2.1	13.7		9.2	15.2	43.3	B	9.3	6.6	55.6	B	9.0	35.5	12.0	L
9.5	25.7	49.2		9.5	38.3	46.7		8.5	15.9	3.6	B	8.5	9.8	28.5	B	9.3	36.1	22.4	
9.5	37.5	2.0		9.5	40.1	6.6	B	9.3	40.5	31.3		9.3	14.8	55.5	B	9.5	37.7	37.8	B
9.1	42.4	16.2		9.1	43.2	55.7		8.3	49.5	43.8	K	9.5	31.9	21.3		9.1	56.4	20.6	K
9.4	47.4	43.7		9.5	45 18.4	43.8		9.4	3 1.8	1.9		7.8	41.9	0.2	L	9.3	43 13.5	26.1	
9.5	55.0	6.0		9.5	24.3	55.7		7.2	19.4	42.1	B	8.0	22 6.8	51.5	L	9.1	15.2	46.1	
9.5	57.1	13.2		9.5	56.8	35.2		9.2	23.3	42.3	B	9.5	27.4	36.9		9.5	56.7	46.9	
9.5	31 13.3	34.1		9.4	58.6	18.6	B	9.5	34.7	41.0		8.9	31.9	24.1		9.5	44 21.5	39.6	
7.8	22.4	29.6	K	9.0	46 1.5	24.4	K	9.5	39.8	7.8		9.5	52.0	58.3		8.8	55.2	30.6	
9.5	28.6	49.3		8.5	2.5	45.8		8.3	4 27.2	56.2	K	9.5	24 46.5	13.8		9.0	45 3.8	53.0	
9.2	39.0	5.8		9.5	43.1	17.2		9.0	39.3	18.1	B	9.5	49.9	32.0		9.4	5.9	31.0	
9.5	50.9	32.2		9.5	44.4	36.2		9.4	45.8	28.0	B	9.5	25 8.1	52.1		8.9	13.6	56.9	
9.3	56.9	27.7		9.5	47 29.7	29.6		9.4	57.3	58.7		9.0	18.3	13.8		9.5	21.3	21.7	
9.5	32 8.9	44.7		9.0	33.3	34.1		7.5	57.3	53.6	K	9.1	26.9	52.1		8.0	38.9	14.6	K
9.5	15.4	33.2		9.5	48 0.4	48.3		9.5	57.9	28.7		9.4	49.6	26.6		8.0	50.3	36.2	L
9.5	18.9	50.6		9.1	15.6	56.5		8.8	5 1.5	38.4		9.5	26 13.2	26.5		7.3	51.0	6.0	K
9.5	19.4	57.2		9.4	19.3	13.7	B	9.1	14.0	23.6		9.4	38.2	32.9		9.5	46 25.5	38.6	
8.7	44.7	59.5		9.0	40.8	37.3		9.4	40.5	28.5		9.4	27 3.0	37.0		9.0	31.3	48.5	
8.7	59.8	54.6		8.4	49 4.4	23.4	K	9.2	7 18.3	9.5		7.7	48.8	1.7	K	9.3	43.3	30.6	
9.1	33 11.9	45.6		9.1	22.8	10.3		7.5	18.8	43.3	K	9.5	51.5	47.5		8.8	52.5	34.3	
9.4	13.5	4.3	B	9.5	29.3	33.0		9.3	30.5	41.2		9.5	28 17.9	18.8		9.0	56.9	2.3	
9.3	13.6	29.9	B	9.0	34.8	39.3	K	9.1	49.7	31.2		6.8	20.5	24.0	K	8.2	58.9	5.1	L
9.0	17.7	58.3		7.8	50 25.5	26.4	K	9.5	9 0.5	20.8		9.5	22.0	46.5		9.5	47 33.5	21.7	
7.9	34.5	2.0	K	8.8	26.2	49.6		9.5	34.6	50.5		8.5	33.8	21.0	K	9.4	37.7	48.2	
8.5	34 3.5	2.2	K	8.4	28.7	11.9	K	9.5	10 8.9	54.6		8.9	58.1	54.2		9.4	39.1	41.3	
9.3	31.4	36.0		9.5	51 4.6	35.2		9.3	39.7	5.6		9.0	58.8	37.2	K	9.5	48 21.9	9.9	
8.3	38.6	27.3		9.5	6.6	28.9		9.3	46.0	21.1		9.5	29 59.2	20.3		9.0	56.7	9.9	

5001—5008				5009—5016				5017—5024				5025—5032				5033—5039			
	23ʰ	+31°			23ʰ	+31°			23ʰ	+31°			23ʰ	+31°			23ʰ	+31°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	49 34.6	2.6		9.5	50 59.4	19.0		9.4	53 44.2	15.1		9.1	56 7.5	39.0	K	9.3	57 56.1	1.2	
9.5	34.8	18.5		8.7	51 4.6	1.9	K	9.0	54 4.6	7.4	K	8.5	29.6	11.3	K	9.0	58 10.9	27.9	K
8.5	37.1	31.0	K	8.2	20.5	7.5	K	9.5	16.9	3.3		8.9	40.6	29.2		9.3	16.8	58.3	K
9.5	50 6.7	44.4		6.2	26.9	33.3	K	9.5	21.8	48.9		9.5	43.1	43.3		9.5	47.6	2.3	
9.3	8.5	27.8		9.5	34.2	34.1		9.5	24.5	17.8		9.5	46.7	10.4	B	9.1	59 7.2	29.6	
9.5	17.6	3.8		9.0	52 25.9	43.0		9.1	55 11.1	6.9	K	9.5	57 17.2	48.5		9.5	16.9	10.1	
8.2	41.0	12.7	K	9.3	31.0	50.3		9.5	33.7	52.3		9.5	51.0	41.9	B	8.9	52.2	45.5	
8.8	46.5	27.6	K	9.3	53 5.8	48.6		8.2	39.6	3.9	K	9.5	54.7	46.9					

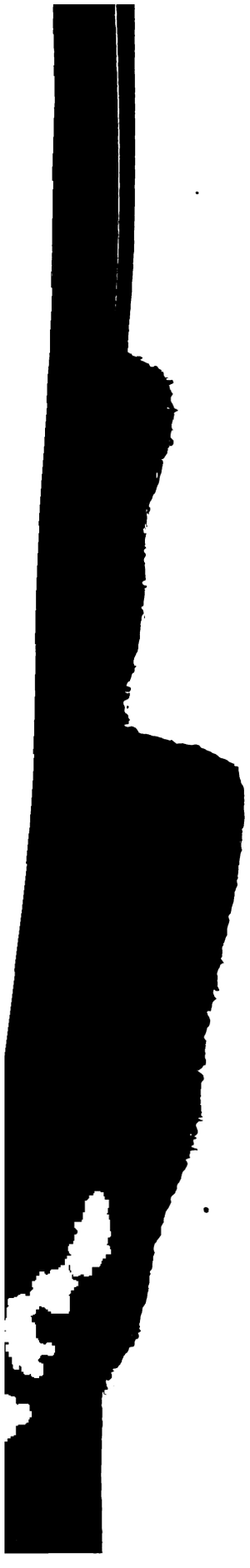
Zone +32°

1—20				21—40				41—60				61—80				81—100			
	0ʰ	+32°			0ʰ	+32°			0ʰ	+32°			0ʰ	+32°			0ʰ	+32°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	0 26.9	35.9	K	6.5	6 32.3	24.4	K	9.5	11 54.4	19.3		9.3	17 19.8	44.3		9.0	23 48.1	46.9	K
9.5	39.4	17.9		9.3	33.6	48.8		9.0	12 8.9	33.9	K	9.5	18 12.5	44.3		9.4	59.7	9.6	
9.0	55.8	41.5	K	9.1	50.1	57.3		9.5	47.5	0.5		9.3	27.8	25.5		9.1	24 34.0	5.4	
8.7	1 1.2	44.8	K	9.2	7 11.9	6.0		9.4	13 10.3	14.9		8.9	58.4	26.5	K	9.5	40.5	53.8	
9.5	20.7	12.4		9.1	32.5	45.8		6.0	11.0	6.3	L	9.5	19 2.7	35.9		8.5	40.8	40.7	L
8.9	21.4	48.9	K	7.3	35.4	13.3	K	9.5	14.3	27.7		9.2	40.5	7.5		9.0	43.2	13.7	K
9.5	2 11.1	50.4		9.4	38.3	36.0	B	9.5	16.7	4.6		8.8	20 6.5	52.9	K	9.5	25 6.6	18.2	
9.5	14.9	29.3		9.5	57.0	45.9		7.0	19.3	10.4	K	9.5	56.1	23.7		9.0	8.8	32.0	K
8.3	35.4	43.8	K	8.5	8 19.8	32.1	K	9.2	37.8	10.9	K	7.5	58.0	49.7	K	9.4	23.0	36.9	
9.5	50.5	24.5		9.3	40.1	43.3		8.0	46.8	52.5		9.5	21 52.3	26.5		8.4	29.6	38.0	K
7.3	3 3.7	19.5	K	9.4	9 0.4	27.2		9.5	57.9	48.6		7.5	59.5	12.3	K	9.0	45.6	17.6	B
9.3	42.4	43.0		9.5	9.3	48.7		9.0	14 9.0	20.0		9.4	22 15.1	58.5		7.9	26 7.0	4.2	
8.2	4 5.8	52.7	K	9.5	36.7	46.2	B	8.9	43.5	15.9	K	8.6	49.0	15.5	K	9.5	13.5	8.6	
9.5	35.0	39.7		9.4	40.5	28.5	B	9.5	45.2	32.3		8.5	53.5	39.0	K	9.5	20.6	11.0	
9.5	5 4.4	36.5		9.3	52.0	14.9		9.5	54.8	4.6		9.4	23 5.5	12.4		9.5	25.8	21.4	
9.4	6.6	3.0		8.6	53.0	19.7	K	9.1	15 33.3	56.8		9.5	21.1	1.2		8.4	48.0	28.3	K
9.5	19.9	32.4		9.3	10 5.6	9.6		9.4	42.5	1.7		9.5	26.4	9.5		9.5	27 29.1	10.6	
9.3	51.8	56.9		9.3	29.3	24.5		9.2	53.1	12.3	K	9.1	33.6	37.0		8.5	28 39.4	50.8	K
9.5	6 4.5	2.1		9.5	56.4	46.7		8.9	16 49.0	13.5		9.0	41.2	1.6	B	8.7	41.0	41.7	K
8.8	30.9	32.2	L	9.5	11 10.5	29.0		9.5	58.6	32.3		6.0	45.0	48.0	K	9.2	29 3.1	10.0	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	6ᵘ		+32°		6ᵘ		+32°		6ᵘ		+32°		6ᵘ—7ᵘ	+32°			7ᵘ	+32°	
m	′	″	′		m	′	″	′	m	′	″	′				m	′	″	′	
9.0	18	11.8	42.3	K	9.5	30	11.1	12.0	7.8	41	55.5	19.3	K	9.3	57 46.5	30.3		8.8	16 32.3	25.5	L
8.4		23.1	57.4	K	9.5		12.3	36.4	9.5		58.4	42.7		9.1	58 39.1	55.1	B	9.1	38.3	34.1	
9.5		54.5	5.3		9.1		12.5	4.0	9.5	42	14.5	35.1		9.5	53.6	25.9	B	9.4	39.2	46.7	
8.3	19	1.3	13.2	R	9.5		19.5	17.7	8.8	43	0.4	57.8	K	9.4	59 0.5	11.0	B	8.5	45.1	23.4	B
9.5		35.2	37.9		9.5		32.2	1.0	9.3		14.0	45.9		9.4	0.7	51.6		7.2	48.1	10.7	K
8.4		35.9	30.5		9.2		53.3	52.4	K	9.5		15.7	0.7	8.5	15.9	49.1	K	9.5	55.8	46.8	
9.5	20	0.8	42.3		9.4		56.3	40.1		9.5		19.6	54.3	9.5	19.3	21.8		8.6	58.4	37.6	K
8.8		22.8	31.5	K	9.3	31	23.0	7.4		9.4		21.4	1.0	9.5	57.8	40.7		9.5	17 24.4	42.4	
9.1		27.9	49.8		9.2		38.3	46.5		9.5		29.5	47.2	9.5	0 6.3	8.5		9.4	24.6	38.4	B
9.3		34.8	24.6		8.2		41.5	32.5	L	9.5		43.7	21.4	8.6	1 10.7	12.4	K	8.8	38.4	2.1	L
8.6		40.4	52.5	K	9.5	32	8.7	16.7		9.1	44	25.6	23.1	7.0	18.4	50.9	K	9.3	43.2	13.0	
9.2		53.8	57.4		7.5		19.5	45.8	L	9.2		26.5	16.9	7.3	26.0	27.4	K	9.1	18 8.4	39.7	
9.5		59.3	8.0		9.0		24.8	24.1		7.0		41.3	41.3	K	9.5	34.2	55.9		9.5	18.7	51.0	B
8.4	21	9.3	52.0	K	9.5		25.4	46.6		8.6		46.6	28.9	K	9.3	36.9	54.1	B	9.5	23.7	19.7	
9.4		18.5	1.8		9.3		44.3	3.9		9.3		50.4	41.6	B	8.7	47.2	23.0	K	9.5	24.0	55.2	
8.1		29.3	54.4	K	9.4		59.9	40.0		8.9		54.7	36.9	9.5	47.6	3.0		9.1	19 4.4	19.2	B
9.1		48.4	39.6		8.7	33	9.2	37.2	K	8.0	45	27.9	40.3	K	8.2	51.2	51.1	K	9.0	11.3	24.9	
9.5		50.5	29.5		6.6		16.8	41.9	K	9.5		47.5	52.8	9.5	3 25.7	24.9		9.3	11.7	2.6	B
8.2		55.2	12.7	K	9.5		26.2	22.3		9.5	46	20.8	39.8	9.5	34.4	29.9		8.7	17.1	9.6	K
6.8	22	10.3	15.4	K	9.4		28.8	50.7	B	9.2		40.4	34.8	6.8	42.6	11.5	K	8.5	37.6	57.8	
9.5		24.8	45.8		9.5		35.0	14.9		8.7		45.4	5.8	9.0	4 3.6	15.4	K	8.0	41.2	16.8	K
9.3		52.6	46.8		9.5		48.2	58.6		8.6		52.7	36.4	K	7.0	8.8	22.4	K	5.0	47.1	4.2	K
8.8		59.4	55.2	R	9.5		55.7	44.5		9.2		57.3	40.8		9.4	47.0	16.1	B	9.1	52.3	28.0	
5.8		59.4	33.0	K	9.5	34	6.8	31.4		9.5	47	10.4	56.5		9.0	50.8	55.2	K	8.8	58.3	25.3	R
9.2	23	9.3	54.7	R	9.2		22.3	37.3		9.5		18.4	56.7	9.4	5 25.7	36.3		9.4	20 9.2	44.5	B
9.0		19.7	47.3		9.5		48.6	59.5		9.5		36.3	50.8	9.5	37.1	5.4		9.3	21 45.2	19.9	
9.5		40.3	33.2		9.2		51.6	59.4		8.3		40.8	26.9	K	9.4	6 1.8	42.9		9.5	54.5	53.5	
9.5		50.8	9.0	B	9.4	35	2.0	3.8		9.1	48	16.6	2.3	K	9.4	22.8	6.4	B	9.3	57.2	3.6	
9.1	24	14.3	20.8	K	8.0		11.4	6.9	B	9.3		55.5	32.9	K	9.5	29.9	7.2		9.3	22 3.1	15.2	
9.2		17.0	51.7	B	9.2		41.3	54.9		9.0		58.7	46.0	8.3	35.9	41.3	K	9.0	15.3	32.5	
8.8		32.3	10.0	R	9.4		43.6	0.1		9.5	49	19.5	10.1	9.3	7 5.2	7.4		9.5	32.1	9.5	
9.3		33.1	1.2		9.3		55.1	57.5		9.5	50	4.9	4.2	9.5	18.3	35.1	B	9.5	43.1	10.2	
9.3		50.9	37.5	B	9.5		55.9	27.2		9.4		11.3	33.9	9.0	20.5	9.6		9.3	49.2	15.1	
9.0	25	3.3	31.0		9.3	36	2.4	7.9		9.5		53.8	19.4	9.2	28.8	14.0		9.5	23 42.2	18.1	
9.5		20.2	54.7		8.7		19.3	12.7	L	9.0	51	22.2	15.1	K	8.5	29.5	10.8		9.3	44.1	5.5	
9.5		21.4	22.3		9.4		25.0	15.2		9.2		22.7	8.5	K	7.8	51.6	12.0	L	8.7	59.7	20.6	
9.4	26	0.3	48.5		9.3		28.8	53.7	B	9.3		23.3	28.4	8.5	8 28.8	36.8		8.0	24 10.5	55.6	K
7.8		8.5	40.8	L	8.5		42.3	41.9	K	8.3		40.1	37.3	K	9.4	40.3	7.0		8.9	11.4	35.4	
8.9		11.3	48.7	R	9.3		47.2	28.0		9.3		49.3	52.2	9.2	57.8	5.3		9.5	38.1	5.8	
9.3		26.0	15.8		9.1	37	37.6	3.8		6.8		51.6	35.3	K	9.2	9 30.8	36.3	K	9.3	25 8.6	9.5	
9.5		26.8	7.7		9.3		55.0	55.2		8.3	52	38.2	8.0	K	9.5	57.9	57.8		1.7	20.7	11.9	K
9.3		28.7	25.5	B	9.5	38	28.1	21.3	B	9.2		38.4	35.2	B	9.2	10 8.0	41.3		8.6	22.1	10.5	
7.3		31.4	24.3	L	9.5		28.1	16.8		9.3		40.1	20.9	9.4	54.8	4.2		9.5	41.0	47.7	
8.4		34.3	45.0	L	9.3		41.2	5.2	B	9.1		49.0	6.2	9.5	59.4	23.0	B	8.6	41.2	56.8	K
9.5		49.6	1.2		9.3		45.3	40.1		8.8		49.1	37.3	K	8.8	11 25.6	34.0		9.3	26 8.3	30.5	
9.5	27	4.3	12.6		8.7		49.0	2.6	K	9.3	53	6.6	14.5	9.2	12 0.7	0.4		9.5	35.0	45.2	
9.1		4.4	15.8	R	9.4		54.4	20.9		9.5	54	2.3	33.4	9.4	44.7	20.0	B	9.4	43.3	28.8	
9.5		12.5	32.5		9.5		58.1	25.3		9.4		28.6	43.6	9.5	13 6.0	41.3		9.5	51.5	9.8	
9.4		14.1	1.3		9.2	39	9.3	43.3	K	9.2		38.1	38.8	8.7	6.4	33.4	K	9.3	28 1.4	39.4	
8.5		40.3	51.5	K	9.5		20.7	29.7		9.1		42.1	29.3	K	9.5	22.4	0.2		9.5	19.4	39.6	
9.5		53.8	14.7		9.0		45.3	27.5		9.5	55	0.8	5.5	9.4	42.5	2.5		9.4	45.5	4.5	
9.3		58.2	22.2	B	9.2		46.6	10.0		9.3		14.1	19.3	B	9.2	14 45.2	13.4		7.5	52.4	45.5	K
9.5	28	25.3	22.6		9.5	40	6.2	25.3		9.4		19.3	14.4	9.3	59.3	24.3		8.8	29 2.7	20.5	
8.6		43.8	37.4	K	5.8		14.3	45.6	K	9.5		57.6	52.3	9.5	15 5.1	12.0		9.5	57.8	32.6	
9.1		46.6	0.3		9.2		16.3	50.5		9.1		58.5	6.8	9.5	23.0	17.2		9.4	30 9.1	8.4	
9.3	29	3.2	12.2		8.3		22.2	16.7	K	9.2	56	30.0	15.9	8.9	26.5	52.0		9.2	12.6	59.3	
9.5		5.5	18.4		9.5	41	8.0	21.8		9.4	57	7.1	5.2	9.5	28.4	4.8		9.5	25.1	42.2	
9.5		13.6	57.9		8.3		20.0	55.1	K	8.3		29.5	39.8	L	9.4	51.3	27.5		9.5	26.5	41.4	B
9.4		35.7	12.7		9.1		28.9	5.3	K	9.1		42.3	55.1	K	9.5	16 10.4	39.1		7.0	37.2	19.8	K
9.5		42.0	10.7		9.1		51.8	6.1	K	9.0		45.8	19.2	K	9.1	14.3	30.5		9.5	31 6.6	0.2	



3101—3160					3161—3220					3221—3280					3281—3340					3341—3400				
	18ᵐ		+32°			18ᵐ		+32°			18ᵐ		+32°			18ᵐ—19ᵐ		+32°			19ᵐ		+32°	
m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′	
9.2	15	15.6	16.1		9.0	32	8.5	19.2	K	8.5	43	18.0	20.3		9.5	53	5.2	25.9		9.4	4	45.5	1.4	
9.5		26.1	9.0		9.2		17.0	27.5	K	9.5		45.8	50.6		8.9		7.1	47.7		8.7		56.3	59.6	K
9.2		30.8	15.8		9.3		19.5	36.5		9.1		55.6	30.5		9.3		19.8	57.6		9.3	5	4.1	29.0	
7.3		51.5	50.2	L	8.8		32.7	7.2		9.4	44	0.3	8.0		8.9		20.9	25.8	B	8.6		6.9	0.0	B
9.0		56.4	40.3		9.4		42.4	22.4		9.5		15.1	13.4		8.8		27.7	16.2		9.1		15.5	10.2	
7.4		58.3	51.9	L	9.3		43.0	30.1	B	9.0		21.6	48.7		3.2		31.3	29.2	S	8.5		16.7	51.4	
9.2	16	3.4	47.4	B	9.4		55.9	31.1		6.3		23.0	38.7	S	7.4		38.8	55.5	K	9.2		29.2	46.2	
9.0		8.0	30.4		9.4	33	18.7	51.4		5.5		28.7	23.5	L	9.5		48.7	1.5		9.5		44.6	27.2	
7.5		24.1	12.7	K	9.3		18.9	54.4		9.4	45	6.1	15.5		9.1		52.2	49.8		9.3		51.8	29.9	
9.2		28.1	9.3	B	9.5		29.8	44.4		9.3		19.4	15.8	B	9.5	54	3.8	55.2		8.7	6	9.7	22.5	
8.2		33.7	26.5	K	9.4		29.8	19.0		9.3		23.5	15.1		9.5		26.3	12.7		9.5		11.1	14.0	
8.3		39.2	50.9	B	8.1		34.8	6.0	K	9.5		39.2	59.8		9.5		43.3	8.5		9.4		19.6	37.4	
9.3		40.2	10.3		9.3		40.5	37.1		9.5		44.8	17.2		9.4	55	14.8	8.8		9.5		31.3	47.7	
9.5	17	36.8	30.5		9.4		47.2	58.0		9.5		54.1	55.2		9.5		14.8	48.3		7.6		46.6	0.4	K
9.1	18	4.3	47.6		9.1		50.8	34.1		9.5	46	3.7	26.3		9.5		24.4	19.1		9.5		50.4	2.3	
9.1		21.4	21.0	K	9.4	34	8.1	29.0		9.0		37.1	12.2		9.5		33.6	20.6		9.0	7	2.0	27.5	
9.1		34.5	47.9		9.3		16.5	10.7		8.6	47	15.4	13.9	K	9.1		54.3	28.5	K	8.9		2.8	6.6	K
7.8	19	1.6	3.7	L	9.3	35	11.8	22.8		9.3		16.0	11.9		9.5		59.2	46.0		8.8		12.8	32.7	
8.6		14.3	42.4		9.3		20.4	34.6	B	8.9		32.1	13.9	B	8.0	56	2.3	11.2	K	9.3		20.7	22.8	
9.4		36.2	14.9		9.3		25.3	59.4		9.4		40.2	57.5		9.0		10.3	40.3	K	9.5	8	10.5	15.9	
8.8	20	37.7	8.0	R	9.4		33.1	15.2		9.5		41.3	38.3		9.5	57	5.7	7.5		9.2		25.2	18.1	K
9.0		46.6	30.9		9.4	36	12.8	55.4		9.0		42.4	34.3	B	9.5		18.3	14.7		9.1		26.7	37.1	
9.0		49.3	15.5		9.3		14.5	43.0		9.0		46.0	13.6	B	9.2		26.0	46.1	K	9.5		31.0	45.4	
9.5	21	9.4	2.9		9.5		23.4	2.2		9.3		46.5	34.1		9.3		58.2	20.2		9.2		35.3	12.4	
9.5		36.3	0.3		9.5		30.1	18.6		9.3	48	5.9	26.0		8.4	58	37.2	49.6		8.5		36.9	44.4	B
9.5		43.5	1.7		9.5		32.3	12.0		9.0		12.3	50.8		8.5		48.8	32.4		9.5		50.5	2.7	
9.5	22	10.4	50.5		9.5	37	11.1	22.8		9.5		24.6	15.6		9.3		55.9	46.7		9.4	9	5.6	36.9	
9.1		31.9	44.9		9.5	38	4.9	59.5		8.7		30.4	3.9	K	9.0		56.5	17.1		8.6		9.3	22.7	K
8.5		37.5	21.7	K	9.5		39.1	16.2		9.0		46.3	3.8	K	9.5	59	18.2	18.8	B	9.5		10.2	43.0	
9.5	23	1.2	56.4		9.0		41.7	8.8		9.0	49	14.4	54.0	K	9.5		24.7	50.2		9.5		22.0	29.7	
9.4		33.8	4.4		9.4		52.0	13.7		9.5		15.3	59.5		9.5		25.7	18.9	B	9.5		52.5	56.2	
8.7		35.2	50.5	B	9.5	39	6.3	5.1		9.2		27.1	49.0	K	9.5		28.7	20.4		8.8		58.3	41.1	K
9.5	24	5.2	13.4		9.2		9.7	48.6		7.4		48.3	25.4	B	9.5		31.9	18.5		8.9		59.1	46.5	K
8.1		7.9	53.2	K	9.4		22.8	33.2		7.7		50.8	13.4	L	9.4		46.4	35.7		9.2	10	20.2	31.2	
9.0		9.7	44.9	K	9.3		58.5	35.7		7.6		54.6	27.6	B	9.4		47.1	31.7		9.1		34.1	36.4	
8.7		12.1	57.0	K	8.6	40	5.6	17.2	K	9.5	50	3.6	16.6		9.4	0	5.0	44.8		9.2		36.5	25.8	
8.2		14.1	39.6	K	9.5		12.8	26.1	B	9.5		4.5	25.9		9.4		10.3	21.6		9.1		48.0	15.0	
9,3		29.1	16.4	B	8.7		14.7	9.3	K	9.1		8.5	6.1	B	9.4		11.1	27.0		9.3	11	17.2	39.7	
9.5		49.5	3.3		8.8		21.6	14.2	K	9.4		10.6	3.5		9.0		15.9	33.4		7.5		18.1	52.4	K
8.9		57.5	41.6		9.2		26.2	46.8		9.2		10.9	2.1		9.2		49.8	32.2		9.4		20.8	23.7	B
7.7	25	9.4	32.7	K	8.6		34.9	12.7	K	8.7		15.1	9.9		8.0		52.2	5.5		9.1		37.7	4.5	B
9.5		38.6	47.9		9.4		43.2	33.0		9.5		24.0	18.7		9.1		54.1	59.2		9.5	.	49.3	34.8	
7.2		42.9	9.2	K	8.9		51.1	8.8	K	9.0		59.3	58.4	K	8.4	1	40.5	1.3	K	9.4		51.0	6.4	
9.4		45.8	59.0	B	9.3		59.9	2.4		9.5	51	2.7	31.5		9.3		48.7	43.4		9.4	12	7.8	28.1	
9.3		49.2	59.1	B	9.1	41	12.1	1.2		9.3		4.3	22.1		9.0		48.8	17.7	K	9.5		13.6	3.2	
9.4	26	8.1	36.8		9.1		18.2	28.8		9.2		10.5	19.9		6.0		56.3	16.2	K	9.3		18.9	11.4	
9.4		30.0	57.3		9.2		20.0	45.3		6.7		35.3	42.9	L	9.4	2	18.4	45.3		9.5	13	5.0	59.9	
9,5		51.5	44.9		9.5		21.9	33.1		9.1	52	1.5	11.4	B	9.4		21.1	42.6		9.3		26.7	8.0	
9,2	27	2.0	44.1	B	9.5		24.2	45.5		9.5		1.8	15.9		9.5		22.0	21.4		9.3		32.2	32.4	
9.5		19.3	18.6		8.7		42.1	7.8	K	9.1		6.3	26.0		9.3		44.7	0.6		9.3		38.6	3.6	
9.5		51.2	4.1		9.5		59.9	21.7		8.0		9.3	48.0	L	9.3		56.1	15.7	K	9.0		51.6	27.2	B
8.3	28	31.4	2.1		8.8	42	11.1	9.5	K	9.4		11.1	7.1		9.3	3	6.8	55.8		9.5	14	6.0	20.5	
9.5	29	9.5	51.3		9.5		15.0	52.5		9.5		19.6	1.9		9.5		24.5	12.0		9.0		39.6	15.4	K
9.5		13.9	10.2		8.8		23.1	50.5		9.4		22.5	56.8		8.4		37.9	2.3		9.3		41.1	3.3	
9.2		25.5	39.8		9.2		29.0	36.9	K	8.5		24.9	40.3		8.0		52.3	38.1	K	9.5		53.3	53.5	
9.3		45.8	6.2		9.5		38.6	6.1	B	8.7		34.9	32.2	B	9.0	4	4.2	27.8		9.3	15	2.4	28.2	
9.4	30	15.8	21.3		9.5		49.7	2.6		9.5		44.3	5.0		9.4		20.9	36.4	B	8.8		21.6	25.0	K
9.2		56.6	8.6	K	9.1		53.1	48.7	K	9.3		53.1	53.9		8.5		32.4	10.8	B	8.9		25.6	27.0	K
9.2	31	18.7	17.6	K	9.0	43	2.1	55.1		9.2	53	1.3	50.7		8.2		38.9	38.1	B	9.3		26.1	35.6	
9.3		54.5	59.0		7.2		5.1	37.1	K	8.5		3.3	11.2		9.5		45.0	35.7		9.3		35.4	0.3	B



3701—3760				3761—3820				3821—3880				3881—3940				3941—4000			
	20ª	+32°			20ª	+32°			20ª	+32°			20ª	+32°			20ª	+32°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.6	0 20.7	4.0	B	9.3	10 31.4	14.4		9.0	20 9.1	2.1	K	9.3	31 39.2	36.1		9.5	41 34.6	47.3	
9.4	22.3	35.3	B	9.5	32.4	0.8		9.5	41.0	7.0		9.3	56.5	27.5		9.0	42.2	9.3	
9.5	24.9	23.7		9.1	35.1	42.0		9.2	53.5	49.7		7.0	57.1	52.2	S	9.2	49.5	22.1	K
8.9	28.0	11.2		9.3	37.2	53.4		9.1	21 17.3	59.1		9.3	32 5.0	5.2		9.4	50.9	26.0	
9.1	40.3	3.8	B	9.5	48.0	50.9		9.3	26.2	54.5		9.2	8.3	4.4		9.2	42 4.6	37.6	K
9.5	51.0	54.9		9.0	11 12.9	7.9		9.2	26.5	55.6		7.9	25.9	50.5	L	9.1	9.5	54.4	
8.2	1 11.5	10.9	L	9.0	13.5	40.3		9.5	47.4	15.0	B	9.5	43.6	11.0		9.5	17.3	8.0	
9.5	15.4	22.0		9.5	16.8	51.4		9.1	51.0	47.5		9.5	54.4	52.5		9.1	22.6	58.8	
9.5	27.0	48.0		9.4	40.0	49.9		9.5	22 4.4	43.6		9.4	33 10.2	25.1		9.4	39.2	35.9	
9.5	34.2	53.9		9.5	12 0.4	16.8		9.1	5.9	37.6		9.5	24.5	16.7		9.5	42.8	3.0	
9.5	40.0	30.7		8.4	14.0	40.0	K	9.5	13.0	58.8		9.2	47.8	58.1		9.2	48.4	57.6	
9.0	40.3	23.0		9.1	18.7	40.6	B	9.4	16.3	52.2		9.5	34 16.4	42.4		9.5	43 16.9	45.8	
9.5	54.8	21.5		8.0	19.0	44.7	K	9.4	34.0	45.0		9.2	24.6	27.8		8.9	20.5	20.4	
8.9	2 9.1	15.1	K	9.5	27.0	23.7		9.2	45.3	59.0		9.4	35.8	9.3		9.4	24.4	41.4	
7.7	17.3	9.7	K	9.5	27.2	48.1	B	8.4	54.3	29.5		9.0	35.8	59.0		9.5	57.6	15.2	
9.2	33.6	53.6		8.1	27.9	15.0	B	8.9	57.9	17.9		9.5	52.6	3.1		9.5	44 0.5	22.6	
9.1	33.9	58.2	B	9.2	44.0	53.1		9.5	23 24.3	32.9		9.2	35 1.6	7.8		9.5	8.4	3.3	
8.1	35.3	59.4	K	8.4	53.9	49.3	K	9.5	25.5	47.5		9.4	5.0	17.7		9.5	8.8	40.1	
9.5	3 10.7	49.9		8.0	13 3.0	47.8	K	9.5	58.9	28.7		9.4	31.5	34.9		9.5	11.6	42.6	
7.7	24.7	45.8	B	9.4	5.2	14.9		9.5	24 20.0	47.4		8.8	32.1	17.9		9.5	18.1	54.7	
8.4	45.6	57.5	K	8.9	7.1	3.1		9.5	22.4	23.7		9.5	41.0	44.0	B	9.5	23.6	13.0	
9.3	47.1	59.9		9.3	15.6	57.2		9.0	23.1	50.2	K	9.5	41.6	35.4		8.8	34.8	16.5	
9.5	53.0	22.9		9.5	16.7	15.1		9.5	47.3	47.5		8.7	43.5	30.5		9.5	50.0	52.0	
7.8	59.3	59.3	K	9.5	30.0	24.9		9.4	53.1	8.2		9.2	52.3	15.2		9.1	45 3.4	32.2	
9.1	4 3.9	0.2		9.5	32.4	58.7		9.3	25 16.8	20.3		9.5	59.2	34.0		9.5	14.1	5.3	
8.4	8.0	8.1		9.5	33.3	9.1		9.4	18.3	23.3		9.2	36 5.3	59.7	K	9.4	18.2	16.2	B
8.9	25.8	18.4		9.5	57.1	31.9		8.2	27.8	2.6	K	9.4	47.6	46.7		9.5	24.3	47.5	
9.5	26.5	46.8		9.0	14 11.8	57.3		9.3	42.9	11.5	B	9.5	37 6.5	56.3		8.5	41.1	1.5	K
9.4	42.1	6.0		9.0	13.4	0.9		7.2	43.8	36.8	L	9.5	26.2	58.0		8.9	43.5	34.0	B
9.2	53.3	57.4	K	8.8	21.2	21.7		9.1	48.3	5.0	K	9.3	40.6	49.5		9.5	44.2	9.5	
9.0	55.3	57.4	K	9.5	39.0	11.8	B	9.4	56.7	8.5		9.5	48.8	21.6		9.3	49.5	33.0	
8.6	5 5.0	46.5	K	9.5	39.3	32.5	B	9.0	56.8	2.4	K	9.5	52.6	11.3		9.1	46 1.7	54.7	
9.5	14.9	11.4		9.4	46.7	21.1		9.4	26 10.5	30.3	B	8.4	38 1.8	34.9		8.9	4.2	44.5	K
9.1	20.0	25.2		9.5	56.6	48.0		9.5	12.8	27.8		9.2	6.6	56.7	K	6.7	6.7	18.1	K
9.5	42.1	49.7		8.9	15 0.9	1.0		9.4	27.8	2.9	K	9.5	18.6	56.4		9.5	36.1	55.1	
9.4	6 3.3	8.2		9.4	5.1	24.3		9.1	30.8	18.9		9.5	30.5	51.6		9.2	47 11.6	2.1	
9.4	10.8	54.9		9.4	28.8	18.9		9.5	27 18.1	58.0		9.4	34.5	52.1	B	9.2	12.0	36.9	
9.4	17.6	34.9		9.5	32.3	56.5		8.7	24.6	54.7	K	9.3	51.1	58.0		9.2	16.4	28.3	K
9.2	21.0	22.3		9.1	47.0	8.2		9.5	26.0	2.8		9.4	53.6	34.9		8.9	53.7	35.5	
9.5	24.6	2.7		9.5	59.7	52.9		7.5	33.6	53.2	K	9.5	56.5	11.9		6.0	48 1.6	53.2	B
9.3	31.0	3.3		9.4	16 6.1	48.8	B	9.3	37.1	15.4		9.5	39 19.6	25.0		9.0	9.4	2.8	
9.2	31.1	48.0		9.5	13.0	32.7		7.5	43.2	25.0	K	9.5	26.8	26.5		9.5	15.6	11.2	
9.4	42.4	26.3		8.5	17 1.1	1.1	K	9.5	57.8	42.3		9.2	41.3	28.5		9.5	29.8	40.0	
8.7	57.7	17.6		9.4	6.0	5.8		9.0	28 29.4	24.6		9.4	53.1	27.5		7.3	52.9	9.3	K
8.2	7 14.0	49.2		9.5	15.6	48.0		6.7	54.7	0.6	S	9.5	40 8.5	35.6		9.3	55.6	12.7	K
9.5	28.8	43.2		8.8	25.0	8.2		9.3	29 14.6	13.0		9.1	13.4	33.9		8.7	49 12.6	34.2	
9.5	38.4	34.2		9.5	30.3	32.7		8.7	17.6	52.7	K	9.1	18.6	25.7		9.4	12.6	29.3	
9.0	48.8	57.0		9.4	59.0	9.9		9.2	18.6	29.0		9.2	26.0	27.7		9.1	26.1	4.8	K
9.5	58.0	7.0		9.2	59.5	13.1		9.5	41.0	10.3		8.9	28.8	13.6		7.2	28.5	8.0	K
9.5	8 15.0	30.2		9.4	18 8.8	0.8	K	9.5	30 12.7	1.2		9.5	34.4	18.3		9.5	54.2	4.8	
9.5	18.6	41.5	B	9.4	30.0	20.2		8.3	36.9	23.6	K	9.5	36.6	34.8		9.4	50 2.5	31.7	
9.4	40.8	59.7		9.4	52.7	24.2		8.4	38.8	35.2		9.2	40.7	6.3		9.5	5.4	36.9	
8.9	42.2	47.6		9.5	54.4	15.7		8.2	51.6	29.7	K	9.1	45.8	24.3		9.5	6.2	49.0	
9.3	48.0	7.1		8.9	19 3.3	7.9		9.4	57.0	38.8		9.4	54.5	58.1	B	9.5	20.5	13.2	
8.3	9 1.5	34.9		9.3	17.0	39.8		9.3	31 1.8	17.6		9.2	55.2	29.5		9.5	45.4	34.9	
9.2	3.0	9.5		9.5	23.7	14.3		9.5	8.6	51.7		8.4	41 3.3	20.0	B	9.5	51 17.0	27.7	
6.8	12.2	25.4	L	9.1	23.9	44.9		9.4	11.6	52.7		8.4	7.6	48.3		9.5	20.6	58.9	
9.1	29.7	41.8		9.5	30.4	49.1		9.4	16.9	49.5		9.4	13.6	1.9	K	9.5	27.7	29.0	
9.5	40.0	49.7		8.8	57.0	36.0		9.3	21.0	51.2		9.2	14.1	38.0		8.3	43.3	44.8	P
9.5	10 10.2	6.7		9.4	20 3.1	52.9	B	9.5	35.0	8.5		9.5	28.6	2.3		9.5	44.3	58.7	

4001—4060				4061—4120				4121—4180				4181—4240				4241—4300			
	20ᵐ—21ᵐ	+32°			21ᵐ	+32°			21ᵐ	+32°			21ᵐ	+32°			21ᵐ	+32°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	51 55.7	52.2		8.9	2 8.6	4.2		9.0	13 25.7	41.4		9.4	25 50.0	36.7		9.5	37 20.9	31.2	
9.5	52 6.5	24.5		9.5	8.6	20.1		9.4	31.5	59.1		7.9	26 12.5	31.2	K	9.0	21.4	10.9	
9.3	13.7	39.3		9.2	11.4	13.6		9.2	36.4	41.1		9.4	24.4	35.6		9.5	35.8	8.8	
9.4	49.6	59.2		9.2	22.4	58.0		9.2	38.0	24.3		9.5	33.0	37.2		7.8	49.5	41.5	K
9.5	53 8.2	32.4		9.2	26.8	37.8		7.8	38.1	38.6	K	9.5	36.4	18.7		9.4	38 42.5	42.1	
8.6	12.5	2.0	K	9.4	31.3	12.6		9.5	45.1	2.0		7.0	40.7	8.0	K	9.5	48.7	32.0	B
9.5	16.1	40.0		9.5	40.7	30.4		9.4	14 11.5	48.6		9.5	27 2.2	28.3		8.5	52.5	51.8	B
9.4	27.6	7.8		9.4	3 4.4	53.6		6.7	17.6	52.7	K	9.5	2.5	32.5		9.5	55.4	22.9	
9.4	57.7	29.1		7.5	6.7	10.9	K	9.4	30.4	5.8		8.5	9.6	55.4	K	7.3	39 5.4	7.1	L
9.5	54 3.1	32.8		9.5	16.5	35.0		9.5	37.5	45.5		9.1	25.4	47.0		7.4	21.5	26.9	B
9.5	4.0	20.6		9.0	56.8	55.8		8.8	41.9	50.4	K	7.7	36.8	34.4	L	9.2	44.8	5.5	
9.2	11.5	27.1	B	9.5	4 5.0	15.4		9.4	56.0	15.3		9.1	37.6	15.3		9.5	59.4	48.7	
9.5	13.0	31.1		9.3	5.1	55.3		9.1	58.5	8.8		8.2	43.0	13.8	B	8.3	40 31.3	5.7	K
8.9	21.6	56.8	B	9.5	9.9	27.4		6.0	15 14.5	0.2	K	9.5	28 3.3	41.5		7.3	33.7	20.4	K
9.1	24.7	29.3		9.5	16.2	3.4		9.1	28.9	16.1		9.5	28.4	8.5		9.5	36.0	47.5	
9.4	26.6	22.6		9.5	28.5	43.9		9.5	57.0	49.0		8.4	34.2	30.8		9.4	43.0	10.9	
9.3	37.4	53.3		9.0	47.0	29.8		9.3	16 10.2	1.8		9.5	38.4	2.4		9.4	47.9	33.9	
9.5	50.5	38.7		9.1	48.7	55.8		9.4	30.0	11.6		9.5	49.6	46.9		9.5	41 5.5	39.1	
9.3	51.2	29.0	B	8.7	5 0.2	7.5	K	9.5	43.7	50.9	B	9.3	58.8	7.8		9.4	30.0	56.3	
9.4	52.1	14.8		9.0	1.7	36.3		9.5	17 1.4	13.6		9.0	29 5.2	9.6		9.3	30.7	37.7	
9.4	55 7.4	13.6		9.5	3.4	59.8		9.5	6.7	7.2		9.4	11.2	23.6		8.2	42.2	42.5	K
9.5	17.0	59.5		8.9	5.2	11.5	K	9.2	14.6	3.0		9.4	23.0	22.9		9.5	42 2.5	17.2	
9.2	19.0	54 9		7.5	15.2	32.6	B	9.4	19.0	39.1		9.3	36.9	46.6		6.5	6.7	7.7	K
9.5	38.5	2.0		9.4	18.5	9.8		9.5	19.9	33.2		9.4	44.5	41.5		9.5	25.4	30.8	
8.5	40.6	58.6		8.9	19.9	10.6		9.4	40.7	28.0		9.0	30 12.0	3.7		9.5	48.8	52.2	
9.2	53.8	59.1		9.0	40.7	46.9		9.5	48.0	39.4		7.5	21.9	35.2	L	9.5	58.6	52.3	
9.5	56.2	32.0		9.5	6 11.5	28.8		9.3	18 3.8	16.0		9.5	28.4	50.4		9.1	43 10.5	20.5	
9.1	56 5.5	12.1	B	7.4	28.9	38.8	B	9.3	11.0	11.5		9.2	29.0	39.4		9.3	12.5	50.0	B
9.4	7.3	6.4		9.4	45.4	12.9		9.4	23.9	29.7		7.9	35.2	3.6	K	7.0	19.5	39.3	K
9.4	24.1	8.5		9.5	7 13.8	12.5		7.8	26.0	20.1	B	9.5	56.5	18.1		9.4	26.3	40.3	
9.5	24.5	24.7		9.3	16.3	45.1	B	9.5	44.0	17.5		9.4	31 10.4	49.3		9.5	29.6	4.5	
9.4	26.4	23.8		9.0	24.5	11.5		8.5	19 4.9	56.5		8.9	34.4	7.3		9.4	43.2	13.0	
9.3	31.3	32.9		8.8	31.5	10.6		9.5	8.3	14.3		8.8	38.6	30.1	K	9.2	50.3	2.9	
9.0	35.7	26.7	B	9.5	32.0	13.2		9.0	28.5	31.6		9.3	39.8	21.7	B	9.5	44 12.0	47.5	
9.5	57 26.4	22.3		9.5	57.9	20.9		9.5	39.0	42.0		7.0	43.8	32.8	K	9.5	31.0	46.5	
9.5	27.2	49.2		9.3	8 15.4	18.8		8.1	43.6	51 9	K	7.2	52.9	28.3	L	9.1	45 21.3	47.8	
9.4	34.2	9.9		8.6	16.8	56.4	K	9.5	45.3	43.7		9.4	53.2	26.9		9.3	37.8	38.6	
9.3	49.7	53.2		9.3	31.4	40.6	B	9.5	20 14.0	29.5		9.2	59.3	51.9		9.3	46.0	4.8	B
8.0	58 7.1	39.6	B	9.4	36.5	13.7		9.5	23.7	37.7		9.5	32 11.4	42.8		9.2	49.3	11.3	
9.0	20.8	57.3		9.5	40.4	3.2		6.9	26.9	56.8	K	8.8	26.7	18.5		9.5	49.5	42.1	
9.4	28.6	14.5		9.0	49.0	43.5	K	8.8	21 21.3	1.0		9.3	57.1	1.8		9.1	50.2	1.0	K
9.5	43.9	6.8		9.1	9 11.8	0.1		9.4	25.9	21.2	B	9.5	33 15.1	3.5		9.4	46 5.8	56.4	
8.7	48.4	52.2		9.5	36.5	39.2		9.5	29.2	4.8		9.2	18.7	15.6		8.2	47.4	2.6	K
8.6	59 4.1	26.5		9.5	42.0	38.5		9.5	53.1	26.7		9.0	44.5	56.7	K	9.5	48 15.7	7.6	
9.3	14.8	49.4		9.5	49.7	42.4		8.5	56.9	18.8	K	9.4	46.0	24.8	B	9.0	19.1	58.8	
8.0	22.2	55.1	K	8.1	10 19.9	9.9	K	9.4	22 11.8	19.8		9.4	34 2.3	16.0	B	9.0	22.0	29.8	K
9.5	38.6	1.1		9.5	46.1	33.2		9.5	14.5	49.7		9.5	12.1	17.5		9.4	28.9	29.0	B
9.4	49.5	56.6		9.5	50.0	14.0		9.3	19.0	22.2	B	9.2	30.0	55.9		9.1	38.8	38.5	
8.1	0 26.6	39.8	L	9.5	54.3	35.2		9.3	30.0	16.0		9.5	32.9	17.3		9.2	42.5	46.9	
9.4	31.2	35.0		9.5	11 22.5	8.5		8.3	35.9	18.5		8.0	35.4	9.3		9.5	49 2.5	1.5	
9.3	34.6	39.2		9.0	24.7	40.7	K	9.1	23 9.4	48.3		9.1	35 7.2	41.8		9.4	15.0	42.7	
9.2	44.5	55.0		9.5	24.8	33.3		9.5	11.7	14.4		8.5	44.1	22.9	B	9.1	18.7	21.1	B
9.5	52.7	4.5		8.8	26.0	14.7		9.0	29.7	6.7		9.4	45.0	8.5	B	9.5	22.3	30.0	
9.4	1 4.8	23.5		9.5	26.1	33.7	B	7.6	48.9	10.9	L	9.0	36 4.5	28.6		9.0	25.7	34.5	
9.4	9.1	23.9	B	8.3	48.2	26.3	K	9.5	55.0	50.7		9.5	15.9	7.3		9.3	29.3	10.1	
9.5	19.0	2.8		9.0	12 26.7	14.6		8.9	24 6.4	33.6		9.3	26.0	33.1		9.0	29.7	59.6	
9.3	20.1	14.6		9.1	48.9	50.1		8.5	12.7	49.3		9.0	29.3	36.2		9.5	31.1	44.7	
9.5	42.7	20.1		9.2	54.6	51.9		9.5	15.5	12.3		9.4	40.5	3.4		6.8	53.3	40.8	B
9.1	50.0	15.2		9.4	13 2.8	25.9		9.0	57.5	35.3		9.5	40.5	53.1		8.2	50 10.0	38.3	K
7.5	58.1	48.9	K	9.1	8.4	8.3		8.6	25 37.6	59.4		9.5	57.0	38.4		9.4	10.3	16.2	

4301—4360				4361—4420				4421—4480				4481—4540				4541—4600			
	21ᵘ—22ᵘ	+32°			22ᵘ	+32°			22ᵘ	+32°			22ᵘ	+32°			22ᵘ—23ᵘ	+32°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	
9.5	50	11.1	58.4	9.5	5	44.8	33.1	9.2	19	41.5	47.3	9.5	33	35.3	57.1	9.5	47	36.6	39.3	
8.8		25.7	33.0	K	9.0		48.7	20.7	K	9.0		44.0	39.4	B	9.4	34	10.5	35.5		9.5		42.5	4.0	
9.2		30.0	4.1		9.5		50.5	10.7		9.4		46.6	35.0		8.0		33.6	2.2	L	8.3		53.2	45.5	
9.4	51	7.2	52.8		8.8		52.6	1.9	K	8.4		48.0	1.9	K	9.0		34.8	11.3		9.3		53.6	12.8	B
8.5		20.2	21.4	K	9.3	6	2.2	46.9		9.2		54.5	29.0		8.7		41.5	43.4	K	9.2	48	1.5	0.9	
8.1		24.5	41.7	L	9.3		31.8	8.0		9.5	20	12.8	37.2		9.5		48.5	33.1		9.1		7.4	18.1	
9.5		30.1	3.2		8.8		36.5	33.1		9.5		18.2	1.3		9.3		49.2	12.0		9.2		21.5	0.1	K
9.0		53.0	11.1		7.2		37.6	52.9	L	7.5		46.8	46.9	L	8.5		57.0	42.9	K	9.5		22.0	33.5	
9.0		57.5	33.5	B	9.0		40.7	23.1	K	9.2		53.2	58.8	B	9.5	35	3.0	56.7		9.4		24.8	55.5	
7.8	52	51.8	56.4	K	9.5		59.8	4.0		8.5		57.5	47.7		9.4		22.7	56.6		9.4	49	3.4	53.8	
9.5		52.0	15.2		9.5	7	18.6	57.3		9.0	21	0.3	28.3		7.8		28.9	29.0	K	9.4		10.3	34.9	K
9.0	53	18.8	23.0		8.3		41.7	30.0	L	9.2		49.8	34.1		9.4		57.5	34.4		8.0	51	4.7	56.6	K
9.4		21.8	5.2		8.3	8	9.0	5.7	K	9.4		50.4	54.0		8.8		59.4	8.3	K	9.2		11.4	55.6	B
8.7		49.6	44.2	K	9.5		28.0	6.6	B	9.0		51.5	58.8		9.0	36	15.0	30.7		9.1		14.8	30.7	
9.0		54.2	48.2	K	9.5		59.6	6.1		9.2	22	16.8	16.8		9.5		16.2	38.6		9.5		17.1	38.8	
7.0	54	6.0	19.5	K	9.5	9	33.7	39.2		9.4		52.4	47.0		9.4		19.8	47.3		9.4	52	4.3	47.7	
9.1		10.2	59.5	K	9.5		57.4	6.7		7.6	23	2.1	5.7	L	8.3		28.5	32.0	L	9.3		16.7	39.0	
8.0		59.5	29.0	K	9.5	10	12.8	42.4		9.1		12.0	38.5		9.3		30.7	15.1		9.2		24.1	33.5	B
9.0	55	1.4	2.2		9.4		17.9	58.0		9.1		27.7	55.2		8.5		35.3	29.6		9.5		26.6	2.2	
9.5		18.8	24.5		7.9		25.8	51.0	B	9.5		31.6	38.6	B	7.5		52.0	4.7	K	8.0		50.0	45.5	L
9.1	56	3.9	52.5		8.0		38.5	15.8	L	8.2		33.6	31.3	K	9.2	37	15.7	51.8		8.5		57.8	58.7	K
8.9		11.5	17.6	K	9.5		59.3	55.0		9.5		34.3	44.2		9.0		43.0	51.4		8.5	53	17.7	39.7	K
8.9		12.8	32.7		9.5	11	22.0	25.6		9.5		52.8	29.1		9.4		50.8	17.5		9.4		46.2	39.3	
6.8		15.5	41.3	K	8.9		29.2	15.2	K	9.4		53.0	52.3		9.3	38	23.9	13.6		9.0		50.3	27.5	
9.1		30.1	57.0		8.8		32.5	29.0		9.2		53.1	20.1	K	9.3		49.0	12.9		8.8	54	17.8	7.8	K
9.3	57	4.5	46.6		9.1		43.3	33.1		8.7	24	1.0	48.0		9.4		54.1	42.5		9.4		38.1	53.3	B
9.5		23.2	6.8		9.3		54.4	11.7		9.4	25	21.2	22.3		9.3	39	3.2	8.5		9.4		58.6	53.3	B
9.5	58	2.3	35.2		8.0		58.1	4.1	K	7.8		29.4	37.6	L	8.3		8.4	6.2		9.5	55	28.7	33.3	
7.0		11.9	14.5	K	9.3		58.2	31.7		9.4		42.5	4.5		9.3		11.2	43.5	B	9.3	56	23.2	24.7	
9.2		28.2	29.7		9.5	12	13.5	53.4		9.4	26	2.5	55.4		9.1		31.7	33.1		9.1		32.3	21.2	B
9.1		30.8	36.5		9.3		24.7	21.1		8.5		14.0	39.6	K	9.1	40	15.0	38.8	K	9.5		47.3	45.9	
8.7		39.2	7.2	K	8.8		33.8	10.7		9.0		19.9	15.7		9.2		20.8	51.8		9.0		54.8	32.7	
9.5		48.3	20.0		7.2		44.2	47.2	L	9.0		24.0	12.6		8.7		38.0	6.0		9.5	57	1.3	59.6	
9.2	59	25.5	39.5	B	9.5	13	34.1	8.5		9.5		34.8	50.2		8.5		47.2	39.5	K	8.8		43.2	58.7	
9.5		29.5	48.0		9.5		38.3	14.7		9.5		36.9	2.2		9.5		55.9	57.0		7.2	58	8.2	36.2	K
9.5		41.6	41.9		9.3		38.9	43.9		9.2	27	0.4	52.0	K	8.9	41	23.0	36.5	R	9.5		19.7	56.1	
9.0		55.9	53.8	B	8.8		55.0	50.1	K	9.2		32.4	33.1		8.5		27.5	15.1	L	9.3		27.9	54.5	
9.5	0	30.5	43.4		9.5	14	13.8	44.9		8.3	28	2.8	42.5	K	9.3		42.9	6.3		9.4		42.1	28.9	B
9.5		32.2	13.3		9.3		23.1	34.8		9.3		3.5	28.9		7.5		52.4	41.5	K	9.4		42.7	13.4	
8.8		32.4	52.5	K	9.5		47.2	58.0		8.6		35.2	25.4	B	9.2		55.5	36.4	B	9.3		53.5	13.9	B
9.3		52.0	16.2		9.5	15	4.0	43.5		7.7		41.4	5.5	K	8.1		57.1	24.8	K	8.0	59	15.8	30.3	K
9.3		58.4	2.6		9.5		16.3	47.6		7.2	29	2.1	1.7	K	9.4	43	1.2	55.8	B	9.1		25.5	21.4	B
8.4	1	23.5	43.4	K	9.1		30.1	1.1		8.5		26.4	8.0		9.5		7.8	23.0		9.4		39.7	25.1	
9.5		25.2	12.5		9.2		37.5	6.3		9.4		33.8	33.8		9.1		35.5	45.1	K	9.0		43.0	14.7	S
9.4		34.8	53.8		9.5	16	8.6	2.2		8.9		36.4	40.0	B	9.5		46.3	24.0		9.4	0	19.0	47.0	
9.4	2	34.7	12.5		9.1		9.5	43.5		9.4		36.9	51.3		8.5		55.3	58.0	K	9.0		21.0	30.0	K
9.5		41.8	20.7		9.5		11.3	14.3		8.6		46.5	2.9		9.5	44	22.3	42.8		6.3		32.6	3.0	K
9.5		46.6	0.4		7.5		19.0	51.9	K	9.4		51.8	25.1		9.4		29.5	4.3		9.5		41.3	4.3	
5.7		50.5	28.3	K	8.3		19.1	58.8	K	8.8	30	1.0	17.2	K	6.5		46.0	3.5	L	9.0	1	14.9	49.8	
9.0	3	6.0	23.1	K	9.2		29.8	57.2		9.5		5.4	1.7		9.5	45	21.7	29.4		9.3		17.0	29.9	
9.0		21.8	21.7		9.5		47.3	44.9		9.5		22.7	50.3		9.5		46.9	2.6		9.1		23.3	36.4	
3.8		34.5	28.3	K	9.5	17	11.8	33.4		9.5		26.7	56.3	B	9.5		56.8	53.6		9.1		45.6	50.5	B
9.2		37.9	8.4		9.5		12.5	40.3		7.3	31	22.2	28.9	K	9.5	46	0.1	46.6		9.4		53.4	23.3	
9.5		43.2	36.2		9.3		38.3	9.5		7.6		59.8	48.2	L	9.0		8.8	8.5		9.1	2	18.0	51.7	
9.5	4	23.2	50.0	B	9.4	18	18.2	48.1		9.3	32	33.9	3.1		8.8		16.9	30.0		9.3		19.2	2.7	
9.4		32.9	50.2	B	6.9		28.8	3.6	L	8.3		38.9	7.1	K	8.3		38.4	0.3	K	6.8	3	12.8	59.3	K
9.4		35.4	47.9		9.2		40.2	8.8	B	9.5		51.3	18.2		9.4		47.0	0.6		9.5		25.4	23.8	
9.4		44.4	22.4		9.1		46.5	54.3		8.0		57.2	10.5	K	9.1		48.8	3.2	B	9.4		28.9	21.3	B
9.5		53.9	1.5		9.0	19	2.4	16.4		9.4	33	19.2	23.2		9.3		54.0	2.4		8.5	4	19.1	30.7	K
9.0	5	7.0	41.4	K	9.1		2.5	33.4		8.8		19.2	28.7	B	9.5		54.3	58.8		9.5		25.7	54.8	

4601—4635				4636—4670				4671—4705				4706—4740				4741—4775			
	23ᵘ	+32°			23ᵘ	+32°			23ᵘ	+32°			23ᵘ	+32°			23ᵘ	+32°	
m	m ′ ″	′		m	m ′ ″	′		m	m ′ ″	′		m	m ′ ″	′		m	m ′ ″	′	
9.5	4 32.8	12.3		9.5	17 21.5	4.1		6.8	29 20.3	6.2	K	8.7	39 19.7	35.7	K	9.0	50 23.1	59.8	
9.3	52.4	9.9		9.5	33.8	41.1		9.4	21.6	0.6	B	9.5	38.8	26.7		9.5	39.9	8.4	
9.1	5 17.0	46.8		9.4	35.1	42.3	B	9.4	43.0	1.9		9.5	40 46.4	17.9		9.5	43.8	52.9	
9.2	6 42.8	20.2	K	8.4	36.4	48.9	K	9.0	53.9	13.2	K	9.5	51.4	12.4		9.3	50.0	1.1	
9.5	46.0	32.2		9.5	51.3	12.2		9.3	30 13.4	20.9		9.5	56.9	28.4		7.8	51 24.8	56.3	L
9.5	7 8.7	58.6		9.2	18 24.3	3.6		9.0	50.8	26.7		9.3	57.1	58.0		9.5	43.7	22.2	
8.8	15.4	14.7	K	8.9	33.9	37.7		8.8	31 2.1	2.5		9.4	59.7	8.0		5.8	52 7.9	55.6	S
8.8	23.0	27.1		9.5	56.8	55.9		9.0	3.4	11.4	K	9.3	41 1.1	15.4	B	9.0	49.0	19.1	K
9.1	36.1	32.0		9.5	19 5.4	28.0		9.2	38.8	58.6		9.4	5.4	59.4		9.3	53 28.4	16.7	K
8.6	43.2	39.3		9.3	14.3	24.0	B	8.4	46.9	9.1	K	8.9	42 1.9	37.7		9.0	29.9	0.1	
9.5	8 54.5	24.1		9.5	35.4	35.6		9.5	32 8.4	12.8		9.5	15.8	8.7		9.0	31.1	43.1	
8.0	57.3	16.4	K	9.5	56.0	54.3		9.1	15.5	29.8		9.4	23.5	44.9		8.4	52.6	20.3	K
9.5	9 34.8	32.0		9.5	20 31.5	56.6	B	9.1	44.9	47.0		9.5	51.9	2.9		9.0	54 38.4	54.1	
9.3	47.9	41.3	B	7.5	43.7	10.6	K	9.5	47.6	36.7		9.5	43 11.0	22.5		9.0	48.0	43.7	
8.6	10 6.9	42.8	K	9.0	57.5	46.4	K	9.0	33 25.7	42.2		8.9	44 33.4	37.7	K	8.5	54.8	9.4	
9.4	31.3	31.2	B	9.5	21 10.9	27.0		9.0	42.4	50.8		8.9	43.9	45.3	K	8.9	55 52.7	2.3	
9.4	34.8	1.3		9.4	37.7	55.7		9.5	49.3	49.7		9.3	54.5	22.8		9.0	52.9	16.4	
8.2	35.0	28.2	L	9.5	22 24.1	7.8	B	8.8	54.0	32.5		9.5	45 7.6	53.2		9.5	56 29.4	56.6	
8.5	11 16.3	43.7	L	9.5	23 2.0	5.7		9.4	34 28.8	14.6		9.3	15.1	5.6		8.9	30.0	40.7	K
8.7	26.7	53.1	K	7.7	24 25.9	53.2	K	8.9	53.5	37.7		8.9	37.4	25.9	K	9.5	57 4.1	45.9	
8.0	37.2	15.4		9.2	42.0	2.0		9.5	59.7	52.5		9.5	46 12.5	28.4		9.5	30.4	7.7	
7.5	39.6	56.1	K	9.4	58.6	36.7		9.0	35 16.0	57.3	K	9.5	18.9	47.3		9.3	34.4	23.4	
9.2	12 8.7	43.7	B	8.0	25 21.2	55.7	K	9.5	48.0	52.2		8.9	24.2	11.9	K	9.2	35.0	33.2	B
8.8	53.5	28.7	B	9.5	21.3	7.0	B	9.5	57.7	44.9		9.4	24.5	19.9		9.5	36.6	43.4	
9.5	13 22.8	35.8		9.5	49.0	51.3		9.5	36 14.3	54.6		9.0	34.6	19.5	K	9.4	40.7	35.6	B
9.1	34.0	59.8	K	9.5	26 7.9	11.9		9.3	33.8	6.2		7.9	47 0.2	47.3	K	9.5	49.5	32.5	
9.5	14 5.0	1.7		9.4	16.1	26.6		9.5	37 14.4	30.5		9.5	13.7	54.6		9.5	58 28.8	12.6	
8.0	9.3	13.2	K	9.5	22.4	30.2	B	8.2	51.9	58.1	L	9.0	14.4	37.7		9.5	33.9	4.1	
8.8	43.7	2.7	K	9.3	38.6	25.6	B	8.7	38 5.1	49.6	L	9.5	59.1	50.1		9.5	54.8	31.7	
9.5	54.8	58.9		9.5	44.9	20.5		9.4	8.4	50.5		7.5	48 2.5	4.7	L	9.5	59 3.0	6.3	
9.4	15 18.4	12.3		9.5	27 19.8	17.4		9.4	15.0	16.1		9.0	36.4	32.1		8.3	10.1	51.1	K
9.5	30.8	23.0		6.0	28.9	41.5	L	9.3	31.1	58.2		7.0	46.3	40.1	K	8.9	29.9	4.6	K
9.5	16 12.1	9.0		9.5	30.3	2.5		7.5	36.0	28.8	L	9.5	49 18.1	56.3		9.5	31.2	38.3	
9.1	17 0.3	27.9	K	9.3	28 40.4	42.5		8.3	41.9	15.0	K	8.5	21.9	24.2	K	9.5	51.7	5.6	
9.5	0.4	8.3		9.4	29 11.8	13.9		9.4	39 11.4	15.3		9.1	50 9.2	27.3		9.5	59.3	19.3	

Zone +33°

1—40					41—80					81—120					121—160					161—200				
	0ᵘ		+33°			0ᵘ		+33°			0ᵘ		+33°			0ᵘ		+33°			0ᵘ—1ᵘ		+33°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	0	0.8	36.3		8.9	18	23.9	58.7		9.0	29	3.2	49.1		9.3	44	48.8	17.9		8.8	57	11.3	40.7	K
9.0		5.7	29.0		9.4		34.2	16.8		9.5		4.3	17.5	B	9.5	45	0.7	25.5		9.4		28.5	0.6	
8.5		7.3	32.1	L	9.5		57.7	10.6		9.3		36.3	6.7	B	9.5		6.1	57.1		9.5		42.0	3.5	
9.0		13.9	20.3		7.2	19	1.3	23.0	L	9.5		58.0	43.0		8.0		26.9	8.0	K	9.5		46.8	23.8	
8.4		48.3	40.5	K	9.0		6.3	26.5		9.4		58.9	38.3		9.2		43.4	18.9		9.4		53.1	11.3	
9.1	1	20.8	4.4	K	9.2		40.7	25.4		9.5	30	0.0	15.0		8.8		53.9	53.4		9.5		59.3	56.5	
8.9		31.4	33.1		7.8		56.5	13.0	K	9.3		25.8	9.5	K	9.3	46	21.6	0.8		8.3	58	19.4	32.5	
8.9		52.6	4.2	K	9.5	20	25.0	23.7		9.5	31	9.8	13.7		8.8		36.5	52.9		9.0		21.4	24.9	
9.4	2	7.9	10.3		9.4		31.7	32.0		8.1		14.9	31.0	K	9.5		51.2	9.5		8.2	59	24.9	12.7	K
9.5		32.5	52.4		9.4		41.3	6.3		9.5		30.7	11.6		8.5	47	38.0	45.6	B	9.1		35.1	19.2	
9.0		55.8	9.0	K	7.0		49.4	0.5	K	9.5		38.7	58.0		9.4		38.7	20.4		9.0		39.6	53.4	
9.5	3	0.5	52.4		9.5		50.9	37.2		9.5		52.4	48.5		9.0		43.5	46.1	K	8.5		40.8	26.9	K
9.0	4	4.3	28.3		9.2	21	36.7	5.1		9.5	32	19.2	3.5		8.5	48	9.8	19.7		9.0	0	9.8	36.7	
9.5		20.9	48.5		9.5		50.8	57.4		9.5	33	28.1	37.0		9.5		14.2	28.7		8.8		11.3	49.0	K
9.0		43.4	6.5	K	9.5		54.0	19.2		9.5		58.5	39.8		8.4		15.1	5.7	K	9.4		11.5	58.9	
9.5		59.7	15.5		9.4		58.4	17.5	B	8.3	34	2.5	4.7	K	9.5		52.8	29.7		8.3		32.4	46.3	K
9.5	5	54.0	20.8		9.4	22	17.3	7.5	B	9.5		13.3	41.7		9.5	49	8.5	54.8		9.5		39.8	54.8	
9.4	6	32.3	17.5		7.8	23	17.7	18.7	K	9.3		21.0	40.5		8.3		39.1	23.1		7.0	1	12.5	9.6	K
9.1		34.8	13.4		8.8		22.2	50.1		8.5	35	47.7	3.8	K	9.0	50	16.3	34.9	K	8.8		35.3	11.6	K
9.5	7	20.7	21.4		9.1		28.3	5.7		9.4	36	2.2	24.5		6.2		19.0	11.0	K	8.0		40.0	50.6	K
9.2	8	52.1	12.8	K	9.5		41.7	53.6		9.3	37	16.0	1.9		9.0	51	5.5	49.6		7.0		55.4	6.4	K
9.5	9	49.0	4.2		9.5		52.1	8.0		9.4		31.8	42.5		9.5		20.8	42.7		9.0	2	7.1	28.0	
9.5	10	13.6	6.2		9.5	24	42.4	3.8		9.5		38.6	46.4		9.3		24.9	14.9	K	9.5		47.5	22.7	
8.3		22.5	46.5	K	9.4		48.8	38.6		9.4		42.5	17.5		9.5		28.4	27.0		9.3	3	14.2	53.2	
9.4		38.1	28.8		9.5	25	6.5	55.8		9.5	38	25.2	33.2		9.5		32.1	4.6		8.0	4	27.1	21.0	L
8.8	11	30.0	40.6		9.5		20.2	11.9		9.5		48.4	2.2		9.3		38.9	58.3		9.5	5	8.4	47.4	
9.4	12	17.4	48.4		8.0		21.9	3.1	K	9.5	39	6.3	41.5		9.5	52	6.6	12.2		7.0		12.1	20.6	L
9.5		39.6	40.6		9.2		47.7	7.2	K	9.5		42.9	12.4		9.5		58.7	10.6		7.0		55.4	43.6	K
9.4	14	23.9	6.6		9.5	26	8.2	47.0		9.0		57.4	49.1		8.9	53	25.1	16.9		8.8	6	2.9	38.8	K
9.5		35.9	15.0		9.5		18.6	7.4		9.0	40	18.2	23.7		9.1		44.6	31.8		8.9		15.2	32.5	
9.2		52.3	38.6	B	9.3		55.3	27.4	B	9.5	41	19.3	7.4		9.5	54	3.4	56.8		9.5		26.0	55.0	
9.5		55.0	56.8		9.5		57.3	25.4		9.5		47.8	53.4		8.8		18.3	40.8	K	9.5		36.2	44.3	
8.9	15	11.7	53.7	K	9.1	27	13.7	11.5	K	9.5	42	4.2	55.5		8.7		46.0	52.8	K	8.3		59.4	31.4	K
9.5		48.3	24.4		9.0		30.9	3.5		9.0		48.7	9.5		9.0		48.0	43.2	K	8.8	7	20.2	42.3	
9.4	16	24.2	59.5		7.5		55.6	39.0	K	9.4		59.8	7.1		9.1		50.0	19.3	B	8.2		35.7	57.1	K
8.8		41.7	34.1		8.6	28	8.2	48.7	K	8.8	43	16.8	29.7		9.5		50.9	50.2		8.6		44.8	32.8	K
9.1		51.9	3.6	K	9.0		10.5	50.3	K	7.0	44	5.1	5.7	K	9.1	55	0.2	28.7		9.5	8	23.9	2.0	
9.2	17	0.3	54.6		9.4		37.7	6.5		9.4		25.1	58.1		9.2		13.7	54.5		9.4		41.6	31.9	
8.1		59.2	19.2	K	9.1		39.0	55.6	B	9.0		26.2	29.4		8.6		15.0	29.3		9.0	9	4.4	12.3	K
9.0	18	6.3	22.6	K	9.5		39.0	52.8		8.0		41.6	51.0	B	9.5	56	52.8	36.9		9.5	10	23.1	21.0	

201—260				261—320				321—380				381—440				441—500			
	1ᵐ	+33°			1ᵐ	+33°			1ᵐ—2ᵐ	+33°			2ᵐ	+33°			2ᵐ	+33°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
9.3	10	29.6	13.7	9.5	27	56.4	42.4	9.1	47	14.4	51.0 K	9.4	4	47.5	57.2	9.5	20	15.1	9.0
9.5		44.9	0.8	9.2	28	33.1	37.1 K	9.5		28.0	52.0	9.4	5	8.1	20.7	9.5		51.5	53.8
9.0	11	9.4	5.3 K	8.7		46.9	53.4 K	9.5		35.4	13.0	8.5		21.5	50.5 K	9.5	21	27.9	23.6
8.4		23.5	43.6	9.5	29	27.1	52.9	9.5	48	5.5	27.4	8.5		26.4	56.7 K	9.5		32.5	3.2
7.3		26.7	59.3 B	9.4		32.2	42.7	9.5		7.5	41.1	8.2		46.6	46.3 K	6.5		35.7	11.3 K
8.3		43.5	15.8 K	9.0	30	12.4	48.0	9.4		40.2	58.7	9.4		51.3	6.1	9.4	22	0.8	51.0
8.8		55.2	44.0	8.9		21.9	36.5 B	8.2	49	13.8	25.7 K	9.5	6	14.5	12.3	8.9		15.9	42.3 K
9.5	12	4.4	30.5 B	9.5		31.0	55.5	7.6		25.4	6.6 L	9.4		18.8	4.6	9.5		39.2	14.7
8.5		19.6	13.0 K	9.0		46.0	38.5	9.5	50	14.8	52.1 B	9.5		39.4	36.9	9.1		58.2	27.6
9.5		45.5	0.7	9.4	31	13.6	28.7 B	7.4		33.0	37.9 K	9.5		58.1	39.3	9.5	23	6.4	25.7
9.4		50.4	7.4	9.4		30.7	27.8	9.4		40.7	4.1	8.3	7	30.5	37.6 L	9.5		21.5	49.9
9.3		55.9	56.3	9.5		32.1	31.9	9.5		52.4	50.9	9.5		48.2	14.3	9.5		48.4	12.1
9.2		56.4	49.8 K	7.7	32	7.4	37.3 K	9.3		56.5	30.7	9.4		59.1	37.5	9.3		48.6	48.9 B
9.5	13	14.5	54.7	9.5		7.5	57.3	8.8	51	20.9	57.1 B	9.5	8	10.2	49.3	6.4	24	8.5	54.2 K
9.5		25.9	28.3	9.1		24.8	4.0 K	9.5		39.6	31.1	5.0		14.4	34.6 K	9.2		15.0	51.8
9.5		47.8	5.3	9.0	33	6.7	24.3	9.5	52	26.8	7.9	9.5		41.9	51.0	9.5		24.6	40.8
9.5		49.7	13.0	9.3		10.2	40.4 B	7.9		27.4	35.4	4.1		43.4	11.1 K	9.5		30.2	19.8
9.3		54.8	52.0 K	9.0		21.8	58.3 K	9.4		30.9	0.3	9.3		50.5	14.9	7.5		58.0	42.7 L
9.5	14	26.4	34.6	9.3		27.9	44.4	9.0		54.0	49.9	8.7		54.8	5.1 K	9.4	25	15.6	25.8
6.3	15	25.2	28.7 K	9.3		28.7	5.6	9.0		55.2	16.4 K	9.5	9	6.1	26.9	9.5		30.9	54.6
9.3	16	7.2	28.3	9.4		57.7	47.9	9.4	53	1.4	11.1	9.4		6.9	21.8	6.6		31.4	8.1 K
9.4		8.0	57.4	9.5		59.1	32.2	9.3		23.0	13.1 B	9.5		13.6	28.4 B	8.2		49.2	15.9 K
9.5		30.6	39.5	9.3	34	5.5	54.7	9.1		35.3	5.2 B	9.5		15.2	54.8	7.6		59.2	26.7 K
8.5		51.4	55.0	9.4		17.9	48.2	9.5		35.9	56.0	9.3		32.4	44.5	9.0	26	8.3	9.4 K
9.4	17	14.7	9.2	9.4	35	4.8	42.5	9.0		57.8	22.5	7.8	10	0.3	49.7 K	8.1		18.1	32.2 K
8.9		28.0	52.5	9.1		17.2	39.0 B	9.5	54	7.6	21.2	8.0		40.1	22.1 K	8.5		36.4	43.1 K
9.5		30.2	0.4	9.3		17.7	48.3 B	8.1		11.0	4.3 K	9.5	11	35.2	25.3	9.5	27	48.4	38.1
6.5		54.0	49.7 K	9.4		31.9	54.6	8.4		14.9	57.4 K	9.5		48.9	35.1	9.2		55.3	30.6
9.5	18	9.5	51.1	9.0		36.3	46.5 B	9.4		25.1	39.2	8.9	12	3.0	49.9 K	9.5	28	11.0	8.6
9.3		39.2	17.1	9.5	36	0.4	19.5	9.5		48.8	11.4	9.4		35.3	47.0	9.2		15.9	37.8 B
9.5		39.9	26.8	9.3		37.7	19.4	9.0	55	1.0	40.0 B	9.2		54.6	24.9	9.5		42.0	34.8
7.8		49.5	53.2 K	9.2		52.0	7.9	9.3		2.2	9.9	9.0	13	5.5	34.9	9.5		44.2	15.9
9.0		52.4	45.9 B	9.5	37	11.4	33.0	9.5		19.4	51.4	9.5		18.8	45.0	9.5		54.3	55.5
6.6		52.4	36.4 L	8.1		25.7	7.4 K	9.5		35.5	13.3	9.3		26.8	12.4	9.5		54.3	0.9
9.5	19	23.2	11.6	8.2		52.9	0.9 K	9.5		39.9	3.6 B	9.4		30.0	50.9	9.5	29	41.4	8.5
8.2		34.7	51.9 K	9.5	38	38.8	55.0	9.5		57.8	25.6	9.2	14	7.6	41.3	8.0		46.9	44.2 B
9.4	20	20.7	17.9	9.0		55.6	35.8 K	9.5	56	13.3	32.5	7.8		8.1	2.4 K	9.5		49.1	56.3
9.1	21	9.4	21.1	9.5	39	12.5	21.9	9.5		23.1	0.3	9.5		25.0	59.6	8.2		52.1	42.2
9.3		23.1	40.5 K	9.2		41.4	0.9	9.5		34.7	16.7	9.3		39.9	47.0	9.5	30	0.0	6.0
9.5		35.4	55.7	9.3		45.2	52.9	9.3	57	24.6	38.7	8.6		56.0	25.7 B	9.5		14.7	6.4
9.5		55.3	50.5	9.1	40	27.8	2.4 K	9.0		51.1	12.1 K	9.1	15	5.5	6.1	7.5	31	4.8	19.8 K
9.5	22	16.8	58.0	8.0		28.4	25.2 K	8.9	58	17.2	32.4 K	7.5		14.3	12.0 K	8.0		6.2	26.2 L
9.1		21.3	24.4 B	9.2		37.1	51.1 B	9.2		17.5	53.9	9.5	16	2.8	5.7	9.4		11.4	11.1
9.5		28.2	24.6	9.4		43.0	57.3	9.4		50.0	51.3	9.5		7.7	23.2	9.5		23.4	54.3
9.4		29.2	24.1	8.3		47.8	20.5 K	9.3	59	11.2	35.6 K	7.2		31.1	12.9 K	8.0		29.1	57.7 B
8.1		39.4	26.6 K	9.5	41	49.5	21.9	9.3		14.3	44.6	9.5	17	8.5	40.4	9.4		44.6	26.0 B
9.4		55.1	29.0	9.5		49.9	47.4	9.4		19.6	50.3	9.5		10.8	16.0	9.4		49.3	32.2
9.2		58.9	4.1	8.5	43	14.2	3.4 K	9.0		32.2	58.1 K	9.3		24.6	8.7	9.4	32	9.6	39.6
9.5	23	38.7	1.2	9.5		12.8	33.4	8.8		44.5	57.3 K	7.8		26.5	48.8 B	9.5		41.5	49.3
9.5	24	4.4	0.7	9.2		51.8	12.3 K	9.5		52.2	46.9	9.5		45.4	52.9	8.4		42.8	53.6 K
9.4		11.8	16.8	8.8	44	13.9	11.9 K	9.5		57.0	18.8	9.5		47.3	21.5	7.1	33	29.3	40.8 K
7.8		43.7	7.2 K	9.5	45	10.6	23.2	9.5	0	23.4	38.5	9.3		50.6	34.0	9.5		33.1	51.1
9.4	25	0.1	29.5	8.4		16.4	47.2 K	8.8		48.5	15.0 K	7.7	18	21.4	16.5 K	8.2		48.4	8.7 K
9.5		40.7	47.9	9.5		33.9	38.5 B	9.2	1	22.1	38.0	9.0		34.9	56.5 K	8.1	34	32.5	32.6 K
9.3		41.6	26.5	9.5		42.8	53.3	9.4		39.8	54.5	9.5	19	12.4	26.7	9.4		35.0	57.9
9.1	26	11.2	56.2 K	9.3		49.1	23.8	9.5	2	8.4	45.0	7.7		32.1	32.5 B	9.4		48.8	6.9 B
9.1		13.3	55.4 K	9.5	46	23.2	4.7	8.9		38.7	5.6 K	9.5		36.5	46.3	9.2	35	36.2	1.0
9.1		39.4	36.8	8.5		30.9	1.9 K	9.4	3	5.6	22.7	9.5	20	0.0	23.6	8.8		41.5	52.2 K
6.5	27	36.4	6.1 K	9.5		47.5	30.0	9.2		27.6	8.0 K	9.5		4.6	42.6	8.8		46.0	48.2 K
9.0		56.1	22.9 K	9.5	47	13.0	53.5	9.5		58.3	56.3	9.0		14.8	2.4	9.4	36	4.2	43.9 B

Zone +33°

1—40					41—80					81—120					121—160					161—200				
	ou		+33°			ou		+33°			ou		+33°			ou		+33°			ou—1u		+33°	
m	°	′ ″	′		m	°	′ ″	′		m	°	′ ″	′		m	°	′ ″	′		m	′	″	′	
9.5	0	0.8	36.3		8.9	18	23.9	58.7		9.0	29	3.2	49.1		9.3	44	48.8	17.9		8.8	57	11.3	40.7	K
9.0		5.7	29.0		9.4		34.2	16.8		9.5		4.3	17.5	B	9.5	45	0.7	25.5		9.4		28.5	0.6	
8.5		7.3	32.1	L	9.5		57.7	10.6		9.3		36.3	6.7	B	9.5		6.1	57.1		9.5		42.0	3.5	
9.0		13.9	20.3		7.2	19	1.3	23.0	L	9.5		58.0	43.0		8.0		26.9	8.0	K	9.5		46.8	23.8	
8.4		48.3	40.5	K	9.0		6.3	26.5		9.4		58.9	38.3		9.2		43.4	18.9		9.4		53.1	11.3	
9.1	1	20.8	4.4	K	9.2		40.7	25.4		9.5	30	0.0	15.0		8.8		53.9	53.4		9.5		59.3	56.5	
8.9		31.4	33.1		7.8		56.5	13.0	K	9.3		25.8	9.5	K	9.3	46	21.6	0.8		8.3	58	19.4	32.5	
8.9		52.6	4.2	K	9.5	20	25.0	23.7		9.5	31	9.8	13.7		8.8		36.5	52.9		9.0		21.4	24.9	
9.4	2	7.9	10.3		9.4		31.7	32.0		8.1		14.9	31.0	K	9.5		51.2	9.5		8.2	59	24.9	12.7	K
9.5		32.5	52.4		9.4		41.3	6.3		9.5		30.7	11.6		8.5	47	38.0	45.6	B	9.1		35.1	19.2	
9.0		55.8	9.0	K	7.0		49.4	0.5	K	9.5		38.7	58.0		9.4		38.7	20.4		9.0		39.6	53.4	
9.5	3	0.5	52.4		9.5		50.9	37.2		9.5		52.4	48.5		9.0		43.5	46.1	K	8.5		40.8	26.9	K
9.0	4	4.3	28.3		9.2	21	36.7	5.1		9.5	32	19.2	3.5		8.5	48	9.8	19.7		9.0	0	9.8	36.7	
9.5		20.9	48.5		9.5		50.8	57.4		9.5	33	28.1	37.0		9.5		14.2	28.7		8.8		11.3	49.0	K
9.0		43.4	6.5	K	9.5		54.0	19.2		9.5		58.5	39.8		8.4		15.1	5.7	K	9.4		11.5	58.9	
9.5		59.7	15.5		9.4		58.4	17.5	B	8.3	34	2.5	4.7	K	9.5		52.8	29.7		8.3		32.4	46.3	K
9.5	5	54.0	20.8		9.4	22	17.3	7.5	B	9.5		13.3	41.7		9.5	49	8.5	54.8		9.5		39.8	54.8	
9.4	6	32.3	17.5		7.8	23	17.7	18.7	K	9.3		21.0	40.5		8.3		39.1	23.1		7.0	1	12.5	9.6	K
9.1		34.8	13.4		8.8		22.2	50.1		8.5	35	47.7	3.8	K	9.0	50	16.3	34.9	K	8.8		35.3	11.6	K
9.5	7	20.7	21.4		9.1		28.3	5.7		9.4	36	2.2	24.5		6.2		19.0	11.0	K	8.0		40.0	50.6	K
9.2	8	52.1	12.8	K	9.5		41.7	53.6		9.3	37	16.0	1.9		9.0	51	5.5	49.6		7.0		55.4	6.4	K
9.5	9	49.0	4.2		9.5		52.1	8.0		9.4		31.8	42.5		9.5		20.8	42.7		9.0	2	7.1	28.0	
9.5	10	13.6	6.2		9.5	24	42.4	3.8		9.5		38.6	46.4		9.3		24.9	14.9	K	9.5		47.5	22.7	
8.3		22.5	46.5	K	9.4		48.8	38.6		9.4		42.5	17.5		9.5		28.4	27.0		9.3	3	14.2	53.2	
9.4		38.1	28.8		9.5	25	6.5	55.8		9.5	38	25.2	33.2		9.5		32.1	4.6		8.0	4	27.1	21.0	L
8.8	11	30.0	40.6		9.5		20.2	11.9		9.5		48.4	2.2		9.3		38.9	58.3		9.5	5	8.4	47.4	
9.4	12	17.4	48.4		8.0		21.9	3.1	K	9.5	39	6.3	41.5		9.5	52	6.6	12.2		7.0		12.1	20.6	L
9.5		39.6	40.6		9.2		47.7	7.2	K	9.5		42.9	12.4		9.5		58.7	10.6		7.0		55.4	43.6	K
9.4	14	23.9	6.6		9.5	26	8.2	47.0		9.0		57.4	49.1		8.9	53	25.1	16.9		8.8	6	2.9	38.8	K
9.5		35.9	15.0		9.5		18.6	7.4		9.0	40	18.2	23.7		9.1		44.6	31.8		8.9		15.2	32.5	
9.2		52.3	38.6	B	9.3		55.3	27.4	B	9.5	41	19.3	7.4		9.5	54	3.4	56.8		9.5		26.0	55.0	
9.5		55.0	56.8		9.5		57.3	25.4		9.5		47.8	53.4		8.8		18.3	40.8	K	9.5		36.2	44.3	
8.9	15	11.7	53.7	K	9.1	27	13.7	11.5	K	9.5	42	4.2	55.5		8.7		46.0	52.8	K	8.3		59.4	31.4	K
9.5		48.3	24.4		9.0		30.9	3.5		9.0		48.7	9.5		9.0		48.0	43.2	K	8.8	7	20.2	42.3	
9.4	16	24.2	59.5		7.5		55.6	39.0	K	9.4		59.8	7.1		9.1		50.0	19.3	B	8.2		35.7	57.1	K
8.8		41.7	34.1		8.6	28	8.2	48.7	K	8.8	43	16.8	29.7		9.5		50.9	50.2		8.6		44.8	32.8	K
9.1		51.9	3.6	K	9.0		10.5	50.3	K	7.0	44	5.1	5.7	K	9.1	55	0.2	28.7		9.5	8	23.9	2.0	
9.2	17	0.3	54.6		9.4		37.7	6.5		9.4		25.1	58.1		9.2		13.7	54.5		9.4		41.6	31.9	
8.1		59.2	19.2	K	9.1		39.0	55.6	B	9.0		26.2	29.4		8.6		15.0	29.3		9.0	9	4.4	12.3	K
9.0	18	6.3	22.6	K	9.5		39.0	52.8		8.0		41.6	51.0	B	9.5	56	52.8	36.9		9.5	10	23.1	21.0	

501—560				561—620				621—680				681—740				741—800			
	2ᵘ	+33°			2ᵘ—3ᵘ	+33°			3ᵘ	+33°			3ᵘ	+33°			3ᵘ	+33°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	36 15.0	42.7	K	9.5	53 54.3	59.8		9.4	10 28.6	14.0		9.5	26 48.3	36.9		9.3	46 39.8	50.9	
8.5	31.3	42.5	K	8.3	54 8.1	19.9	K	9.3	34.1	5.4		7.0	27 36.1	51.8	B	9.5	40.9	17.3	
7.8	58.7	49.4	K	8.6	10.8	52.2	K	9.2	11 3.1	0.6		9.3	28 54.2	47.3		9.2	50.5	57.6	
9.0	37 7.1	38.5		9.5	34.6	25.5		9.5	48.6	14.7		9.5	29 19.1	1.0		9.4	47 0.0	15.5	
9.5	19.7	9.1		7.7	54.2	53.4	K	9.3	48.6	11.3		8.8	44.4	22.0	K	9.5	5.4	31.6	
9.5	38.0	56.2	B	8.3	55 17.0	33.4		9.3	54.3	48.0		9.5	30 2.2	39.0		9.2	14.9	29.3	B
9.5	50.0	10.7		9.5	38.1	10.4		8.7	13 3.3	58.0	K	8.7	9.9	10.3	K	8.3	21.8	41.3	K
9.0	38 28.5	22.2		9.3	48.4	15.0		9.5	38.0	33.1		9.5	14.6	55.3		8.3	43.5	51.2	K
9.1	28.7	35.0		9.5	53.0	45.5		9.2	58.6	26.5		9.1	33.4	33.8		8.3	48 32.2	31.2	
9.2	31.5	25.8		9.4	56 17.1	13.7	B	9.2	14 5.1	20.4	B	6.5	57.6	38.6	K	9.4	49 57.3	46.1	B
9.5	38.4	7.5		9.5	22.1	21.0		9.1	6.7	38.9		9.4	31 7.4	27.4		9.5	50 3.8	2.4	B
8.5	44.3	1.4	K	9.5	33.8	10.9		8.2	34.0	53.2	K	9.4	14.4	29.1	B	9.3	13.5	29.8	
9.4	39 13.9	52.5		9.5	48.8	14.7		9.5	15 3.3	4.0		8.6	14.6	13.3	K	9.3	51 6.4	55.6	
9.5	37.7	22.2		7.5	57 0.5	26.5	K	7.9	4.9	28.6	L	8.2	35.4	9.6	B	9.3	26.0	44.3	
9.3	40 16.2	13.3		8.7	7.0	5.4		7.8	23.6	45.6	L	9.5	32 6.6	45.9		9.4	36.7	34.4	
9.4	20.8	17.2	B	8.2	10.0	12.4	K	5.5	27.0	0.8	K	9.3	22.7	12.9		9.1	41.0	39.6	B
9.3	23.9	21.8	B	7.3	29.6	32.7	K	9.3	35.0	11.6		9.4	29.6	54.1		8.9	41.6	50.5	B
9.5	27.1	16.7		7.7	36.0	4.3	K	8.8	52.3	41.8		4.8	33 13.0	28.6	S	8.9	50.9	3.5	B
8.3	29.8	54.6	K	8.5	58 4.7	56.0	K	9.0	54.6	17.2		7.8	25.7	5.2	K	9.0	52 12.9	37.7	
9.5	33.2	8.0		9.4	22.6	22.1	B	8.5	16 23.4	19.2	K	9.4	45.0	15.4		9.5	36.1	19.1	
7.1	36.7	19.7	K	9.1	34.3	54.6		9.3	29.9	7.2		9.5	45.6	25.8		9.4	43.8	10.1	
9.5	55.7	30.3		9.5	38.6	22.7		9.5	30.5	54.2		9.3	34 3.0	45.5		9.1	50.0	42.6	
9.5	57.7	23.6		9.5	59 23.4	32.4		9.0	57.0	20.3	K	9.4	4.6	7.3		9.5	52.0	59.0	
9.0	41 5.0	58.6	K	9.5	35.0	3.2		9.5	17 18.8	54.3		7.8	12.0	38.6	K	9.5	53 1.2	38.2	
9.2	6.7	3.4		9.1	37.6	44.9		8.8	20.6	45.9		9.3	35.2	55.0		9.5	58.6	4.3	
8.6	11.7	12.8	K	9.4	0 19.8	55.0		9.4	32.3	6.8		9.3	44.6	42.8		9.2	54 2.0	14.7	
9.5	55.6	46.2		9.5	23.0	43.4		9.3	42.0	28.6		9.5	35 0.0	51.4		9.2	5.8	49.1	
9.4	42 33.9	53.6		9.4	38.5	4.4	B	9.3	54.5	8.6		9.5	16.4	33.5		9.5	12.1	53.9	
9.4	43 1.5	49.9		9.4	48.4	6.4		7.0	57.4	54.4	K	9.1	53.1	57.1		9.5	34.9	32.9	
9.5	33.2	0.3		9.4	1 55.8	58.5		9.3	18 10.3	25.8		9.4	36 9.6	25.0	B	9.5	35.7	39.5	
9.3	40.7	57.5		9.5	2 4.3	1.7		9.0	11.0	36.6		9.5	26.2	26.5		9.2	55 15.8	45.1	
9.5	44 20.7	37.9		9.5	8.6	22.2		9.4	16.8	56.4	B	9.2	35.3	9.3		8.8	23.5	33.6	
9.4	46.3	54.5		9.4	8.7	53.6		9.4	28.9	57.7		9.5	45.0	38.5		8.8	34.3	47.4	K
9.5	55.5	20.0		9.5	36.8	54.0		9.0	37.4	56.4	B	9.5	37 18.5	23.6		9.5	38.2	58.5	
9.4	56.2	7.9		9.5	42.0	29.6		9.5	39.3	7.3		9.5	52.4	52.0		8.8	56 6.4	20.5	K
9.5	56.8	26.8		9.3	47.1	3.4		6.0	19 14.9	18.1	B	9.0	38 31.1	25.4		7.3	17.8	50.6	K
9.5	45 33.3	25.9		9.5	59.6	23.4		8.5	16.2	51.8		7.0	42.2	9.0	K	9.5	25.5	24.6	
9.1	41.4	54.5	K	9.2	3 1.8	9.8		9.5	26.0	41.8		8.7	51.7	19.4	B	9.2	44.3	47.5	
9.5	52.0	24.4		9.4	20.7	20.0		9.5	41.9	23.3		7.5	39 29.9	50.7	K	9.1	48.0	33.8	B
9.5	58.8	13.3		9.2	37.9	22.3	B	9.5	20 35.0	11.4		9.1	40 1.3	57.6		9.5	57.3	7.0	
9.2	46 47.4	44.8		9.3	4 15.4	8.9		9.5	36.4	0.1		8.7	4.8	7.1		9.0	57 6.4	23.5	B
8.4	51.5	53.5		9.5	31.6	39.7		9.3	21 19.8	4.3		9.0	45.2	53.9		9.0	8.8	19.5	
8.9	58.0	5.0		9.5	54.1	6.4		9.5	35.3	57.0		8.8	58.8	54.1		9.5	18.0	57.5	
9.5	47 9.2	47.6		9.5	5 18.0	32.7		9.5	48.8	54.9		7.0	41 16.1	36.4	B	9.5	32.4	25.5	
9.0	38.7	51.3	K	9.2	6 31.7	9.8	K	8.0	54.6	23.7	K	9.5	29.2	59.6		7.0	39.3	3.3	K
8.8	48 21.0	22.2	K	8.8	40.0	34.5		9.5	22 18.7	4.5	B	9.4	42 17.0	49.2		9.5	50.4	54.7	
8.4	49 3.5	39.2	K	8.5	40.4	40.0		7.3	21.6	51.9	K	9.1	37.8	33.1	B	9.0	58 5.5	42.7	K
9.5	33.4	30.9		9.4	48.0	50.4	B	9.5	31.1	1.0		6.5	38.2	55.1	K	9.3	10.9	49.5	B
9.5	34.6	42.5		9.5	7 30.3	44.8		9.5	42.3	47.4		9.5	39.3	28.3		9.0	21.2	24.3	
9.0	50 20.8	42.2		9.5	41.0	49.0		9.2	52.4	15.9	B	7.5	43 4.5	45.1	L	9.0	21.8	33.8	
9.5	26.8	47.2		9.5	47.0	41.0		9.3	55.3	50.8		8.5	44.9	3.1	K	8.8	23.2	1.2	
9.0	39.0	51.2	B	9.0	51.0	8.7		9.5	23 14.0	5.0		9.3	44 2.0	56.8		8.5	32.1	16.6	
8.3	42.1	14.8	K	9.4	8 6.4	52.3		8.6	18.3	4.1	K	8.7	11.0	58.5	B	8.4	35.5	17.8	B
9.5	51 1.0	5.2		9.1	13.0	59.8		9.0	41.0	35.6		9.3	11.4	19.8		9.5	39.8	58.4	
9.5	12.3	20.6		8.5	35.6	34.8	K	9.3	24 22.3	40.0		9.4	35.2	1.0		8.0	48.0	43.2	K
9.0	29.0	47.7	K	9.1	47.0	22.0		9.2	38.8	11.9		9.0	51.6	5.8		7.8	59 18.9	19.4	L
9.2	37.1	3.0		9.3	9 10.0	38.7		8.8	43.1	46.6	K	9.0	45 6.2	28.7		8.8	34.9	33.2	
8.7	52 15.7	51.1	K	9.3	30.9	25.3	B	9.5	25 31.0	33.7		9.5	42.5	52.0		9.0	39.0	42.3	
9.5	53 20.6	17.8		5.0	41.9	40.7	K	9.1	58.5	53.4		9.3	46.9	59.0		8.8	40.2	3.3	
9.5	25.0	39.3		9.3	52.0	38.2		7.7	26 15.8	10.5	K	9.1	46 37.5	45.4		9.3	51.2	48.5	

801—860				861—920				921—980				981—1040				1041—1100			
	4ᵘ	+33°			4ᵘ	+33°			4ᵘ—5ᵘ	+33°			5ᵘ	+33°			5ᵘ	+33°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	0 8.9	22.8	K	9.4	17 40.4	20.7		9.0	45 39.1	11.6		8.8	5 1.8	10.3	K	8.9	16 45.0	44.7	
8.0	24.0	36.7	L	9.4	18 6.7	18.0		9.3	52.4	41.2		9.2	29.8	10.1		8.8	17 5.9	40.5	
9.2	57.2	26.4	K	9.3	37.3	16.1	B	9.5	46 46.3	6.0		8.9	46.8	13.8	K	9.5	10.1	58.0	
9.5	1 6.1	58.1	B	9.0	41.1	10.7		9.4	47 9.6	12.4		9.5	55.1	29.6		9.2	14.6	33.0	B
9.4	15.2	52.0		9.3	51.6	18.2		9.5	11.0	24.3		9.5	55.4	4.8		6.5	20.2	7.6	K
9.4	26.9	1.6		9.5	19 2.2	6.8		8.0	21.3	45.2	K	9.5	6 33.7	26.1		9.5	34.1	38.2	
6.2	41.8	12.3	K	7.7	8.1	52.6	K	9.3	26.0	2.8		9.5	35.0	33.5		9.4	38.9	34.0	
9.3	2 30.3	40.6		9.4	20 43.7	4.4		9.4	26.4	45.5		9.5	53.8	40.9		9.5	48.3	58.3	
9.5	36.9	9.5		9.5	21 11.0	10.5		8.8	37.3	58.7		8.6	7 15.8	34.5	K	7.1	18 12.2	49.0	B
9.4	3 14.3	34.3		9.4	14.8	13.6		9.5	59.0	37.9		9.5	29.9	17.2		9.5	14.8	46.0	
7.8	41.5	20.5	L	8.5	18.5	42.0		9.5	48 14.2	26.2		7.6	36.2	9.8	K	9.5	18.1	53.3	
9.5	51.2	35.6		9.4	24.8	5.3	B	9.0	15.0	5.9	K	9.5	42.9	31.5		8.7	18.9	20.8	
8.3	51.7	27.0	L	9.3	38.0	19.1	B	9.0	49 15.9	12.0		9.2	56.4	18.7		6.8	26.9	38.3	L
8.8	4 2.0	3.9		9.4	22 55.5	3.5		9.5	25.8	43.9		8.0	8 2.1	2.5	L	9.5	30.0	9.0	
9.5	19.6	2.4		9.3	55.6	31.3		9.2	31.4	38.8	K	8.2	5.5	25.4	K	9.2	33.2	39.0	
8.3	25.3	51.8	K	8.4	23 32.9	6.3		9.1	50 4.4	14.2		9.2	6.4	8.6		9.5	40.0	11.7	
9.5	39.3	7.0		9.3	54.1	56.3		9.3	6.1	55.5		9.5	11.3	53.1		9.4	50.9	59.7	
9.3	48.7	59.2		9.0	24 7.7	12.5		9.0	55.0	31.0	K	9.4	35.2	52.0		9.3	19 7.3	49.2	
9.4	5 8.2	36.8	B	9.5	34.2	9.0		9.5	51 8.7	29.3		9.0	38.8	26.2		9.3	11.8	29.4	
9.5	12.0	20.1		8.0	36.9	27.9	K	9.0	38.6	23.1	K	5.1	39.8	13.1	K	9.5	25.2	16.8	
9.5	6 4.5	10.4		9.0	25 2.2	57.8		9.5	52 15.4	58.0		8.9	44.1	17.1	K	9.5	45.8	4.7	
9.1	13.5	7.2		9.5	54.5	8.2		9.4	46.6	23.6		6.5	46.9	36.4	K	8.8	20 3.5	10.1	K
9.4	46.1	28.7	B	8.4	26 49.3	37.5		9.3	57.5	54.0		8.2	9 1.6	0.3	K	9.0	6.5	21.0	
9.4	54.0	24.5		8.4	55.1	54.5	K	9.5	53 22.1	9.5		9.5	4.9	43.3		8.9	7.5	19.8	B
9.0	7 36.5	55.9		9.4	27 42.3	35.1		9.3	54 13.2	23.6		8.0	10.5	22.1	K	7.7	13.5	13.2	L
9.3	8 16.6	5.0		9.5	29 43.9	44.5		9.3	26.4	40.7		8.3	20.8	48.5		9.3	16.1	55.3	
8.4	20.1	40.2	K	9.2	30 2.4	49.8		9.2	27.7	36.1		9.2	22.5	52.9		9.5	22.8	47.6	
9.5	34.3	52.5		9.3	31 19.8	56.5		8.5	41.5	3.1	B	6.2	27.6	35.4	K	9.0	41.2	25.1	
7.8	57.9	29.8	K	8.9	41.4	27.9		8.5	48.0	24.0		9.3	33.7	46.5		9.5	41.8	16.0	
9.3	9 11.9	19.8		8.8	55.9	13.6		9.4	55.8	20.1		7.2	49.8	49.7	L	9.4	46.1	47.1	
8.8	21.3	0.5		8.2	32 59.5	41.3	K	9.2	58.6	48.2		9.4	10 2.2	58.3		8.6	21 39.8	9.8	K
9.5	38.0	35.1		7.3	33 37.6	39.6	K	9.5	56 34.6	27.5		9.4	5.5	6.4		9.5	44.4	35.5	
9.5	47.9	36.5		8.5	45.6	2.5	K	7.0	37.0	42.8	K	5.9	28.7	48.1	K	9.4	22 12.0	32.0	
8.3	53.6	0.0	K	9.5	34 18.3	3.0		9.5	57 4.0	5.5		9.1	45.6	3.5		9.5	45.2	6.3	
9.5	10 11.7	21.5		8.3	56.4	52.8		9.5	9.0	42.5		8.9	11 17.9	19.2		9.1	51.3	17.6	
8.8	16.6	51.4		9.0	35 4.8	14.8	B	8.3	31.8	12.9	K	9.4	30.8	49.8		9.1	52.3	47.1	
8.8	18.5	57.6		9.1	15.9	56.4		9.0	58 11.2	24.0	K	8.7	50.6	13.5		9.3	56.8	38.5	
9.5	55.4	35.1		9.5	38 53.1	31.7		9.4	40.1	55.8		9.2	12 24.8	13.5	K	9.5	23 3.7	2.4	
9.2	11 20.0	14.6		9.5	54.5	11.0		9.5	59 8.3	31.0		9.4	29.7	32.9		9.5	24.5	47.7	
7.8	40.9	1.1	K	9.4	39 23.1	8.7	B	9.0	21.7	54.6		8.8	45.5	38.8	S	9.5	26.6	58.5	
9.4	56.3	40.2		7.5	23.9	43.7	K	8.5	40.4	3.5	K	9.3	47.5	37.9		8.3	35.8	19.9	
9.2	12 18.2	33.7	B	9.5	52.9	52.1		9.4	41.9	21.0		9.4	55.0	42.5		9.4	24 1.4	36.5	
9.5	19.8	0.9		9.5	40 20.4	52.7		9.2	0 12.7	7.2		9.2	57.4	22.0		8.3	25.8	18.1	L
9.5	41.2	48.2		9.5	41.6	3.2		8.5	26.6	0.5	K	9.1	13 9.7	10.2	K	9.3	30.1	51.3	
9.5	13 0.9	11.4		9.4	42.8	9.1		9.5	41.4	56.5		9.4	11.7	17.6		9.5	42.2	53.5	
9.5	4.2	44.8		9.4	41 47.6	34.0	B	9.2	1 18.0	9.6		9.3	15.3	16.1		9.5	51.9	24.8	
9.5	11.3	9.0		7.7	48.0	51.2	K	9.5	45.4	26.9		9.1	28.9	57.9		8.5	25 39.0	51.3	
9.5	49.9	3.5		9.4	42 5.9	32.5	B	9.5	46.8	24.7		9.0	50.8	20.2	K	9.4	40.1	3.6	
9.5	14 1.8	34.0		8.8	26.6	24.1	K	9.5	52.0	0.1		9.5	14 4.8	22.9		9.0	43.6	28.3	K
8.0	36.9	30.9	K	9.3	43 38.8	28.6		9.3	54.6	55.1		9.5	8.1	33.0		9.4	44.0	30.9	
6.9	15 1.3	58.0	S	9.4	54.6	41.5		9.4	2 21.3	42.8		9.5	42.1	57.1		9.5	45.2	25.4	
9.5	2.7	5.4		9.4	44 12.7	30.7		9.1	25.8	36.1	K	8.7	15 8.4	30.4	K	9.5	53.6	49.5	
6.0	6.4	47.6	L	9.5	20.3	11.2		8.4	3 10.5	54.4	K	8.8	16.8	12.4		9.5	26 1.9	21.8	
6.0	14.8	38.6	L	9.5	38.3	9.5		9.5	15.4	29.4		9.0	30.6	53.4	K	9.0	9.0	53.2	
9.3	22.3	32.2		9.4	45 11.4	3.1		9.5	21.9	21.6		9.3	31.4	10.6		9.5	11.1	57.3	
8.4	29.9	14.0	K	9.5	20.6	15.1		9.2	31.5	4.0	B	9.5	39.9	33.8		9.5	28.2	57.7	
9.5	16 34.0	9.7		9.5	25.0	41.3		8.1	41.8	8.4	K	9.5	59.7	6.6		9.5	38.6	10.6	
9.5	43.1	51.5		9.4	26.6	55.4		9.0	4 3.8	5.7		9.1	16 2.5	14.0		9.0	27 3.3	57.7	K
9.5	17 9.0	5.9		9.5	28.8	30.8		9.1	13.9	12.4		9.5	31.6	58.5		9.2	14.6	49.0	K
8.8	34.4	37.2	K	9.5	33.5	43.3		9.5	25.7	22.7		8.9	38.6	1.1		9.1	33.7	9.5	K

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ª		+33°		5ª		+33°		5ª—6ª		+33°		6ª		+33°		6ª		+33°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	27	42.0	18.9	B	9.2	39	43.3	46.3		9.3	53	45.0	27.4		9.0	5	13.8	48.6	K	9.2	22	14.4	15.6	K
6.8	28	12.6	27.8	L	9.5		48.5	44.7		9.5		45.6	7.6		8.5		35.7	52.3	K	8.9		17.4	40.8	K
8.3		15.4	52.1		9.5		53.6	35.0		9.5		57.8	34.1		9.4		50.8	8.8		8.9		41.8	47.0	K
9.0		47.6	25.8		9.5	40	16.9	24.2		9.3		59.3	13.7	B	9.5		57.9	19.9		9.5		45.2	53.7	
9.4		52.8	49.3		9.2		39.6	5.4		8.0		59.5	51.5	L	9.4	6	19.3	34.5	B	8.5	23	0.8	36.4	
9.3	29	0.4	11.2		9.5	41	14.8	9.3		9.5	54	2.5	9.8		7.5		29.3	13.7		9.2		4.0	58.9	B
9.5		24.0	19.2		9.4		37.2	32.5	B	9.5		5.1	0.8		8.1		29.9	57.7	K	9.3		7.8	53.7	
9.3		25.5	31.5		9.5		47.0	48.4		9.5		26.0	33.3	B	9.1		40.0	43.3		8.5		8.3	45.5	K
9.5		50.8	8.8		9.3		51.5	2.8		9.0		29.2	44.5		9.5	7	34.8	21.3	B	9.4		24.2	44.8	
9.0		53.4	29.8		9.4		56.9	8.1		8.9		55.8	37.6		9.1		42.2	15.1		9.4		28.7	11.7	
9.3		54.2	44.4		8.8	42	10.9	18.7		9.5	55	1.0	58.6		9.3	8	40.8	40.8		9.3		42.8	9.2	R
9.5	30	0.5	54.3		8.6		12.1	34.0		9.5		5.5	11.2		8.8		46.8	12.6	K	9.3		49.1	0.1	R
8.9		2.6	31.5		9.3		20.5	14.7		9.5		15.4	50.5		9.3		49.0	57.7		9.3		50.6	2.7	K
9.5		23.9	46.5		9.1		26.4	30.3		9.2		35.7	49.7		8.5	9	11.8	31.7	K	8.8		51.5	26.5	
9.4		36.3	10.0		8.8		27.8	39.4		8.3		48.8	44.0	K	9.5		27.8	44.5		9.2		56.9	45.7	
9.5		45.0	13.9		9.5		40.5	56.5		6.3		59.7	35.8	K	9.5		28.6	46.5		6.5	24	12.8	7.9	K
8.6		53.8	25.5		9.5		43.3	22.6		9.4	56	3.8	21.2	B	7.8		32.8	50.7	K	8.2		28.7	37.5	K
9.4	31	0.6	6.0		9.0	43	0.6	48.5		9.4		22.3	30.1		9.4		40.4	25 0		9.3		41.9	16.6	R
9.1		24.5	52.4		6.5		3.5	52.5	L	9.5		28.2	45.7		9.2		43.5	34.6		9.5		48.8	35.0	
7.9		40.1	50.0	L	9.4		30.8	6.8		8.3		29.8	15.3	K	9.5	10	46.9	21.0		9.0	25	2.3	31.5	
9.4	32	8.4	54.3	B	8.6	44	5.5	41.9		9.4		36.2	46.2		9.3		55.8	15.3		8.8		17.7	26.7	R
9.2		33.7	53.4		9.4		9.5	0.9		9.4	57	4.5	33.3		9.4	11	6.5	55.6		9.5		36.2	53.8	
9.2		36.1	51.8		9.4		10.8	34.7		9.2		5.9	49.4	B	9.2		35.8	21.5		9.2		52.8	44.3	K
9.2	33	7.9	53.3		9.5		13.6	14.7		8.2		32.8	3.7	L	9.3		39.6	51.9		9.4		57.9	6.9	B
9.4		8.8	39.8	B	9.1		29.0	59.5		9.2		52.7	47.9		9.4		55.9	19.8		9.5		58.4	6.5	
8.8		16.7	17.7	L	9.5		38.9	4.4		9.4	58	36.8	6.1		9.2		57.7	2.5		9.5	26	22.4	43.6	
7.1		25.6	14.2	K	9.5		44.2	29.5		9.5		50.8	40.7		9.5	12	15.6	8.8		8.8		58.5	0.9	
9.3		44.5	21.4	B	9.3		45.8	7.5		9.5		51.8	18.0		9.5		33.8	7.9		7.9	27	4.7	29.9	L
8.6		47.6	29.5	R	8.8	45	16.0	2.7	K	9.5		55.0	32.6		8.9		42.0	35.1		9.4		8.0	56.8	
9.4		51.6	24.0		9.4		16.7	28.3		9.5	59	23.6	33.4		9.3		59.7	12.1		8.6		28.8	45.5	L
9.3		56.4	12.2		9.5	46	4.4	13.3	B	9.4		28.0	51.1		9.5	13	8.6	2.2	B	9.4		37.9	47.7	B
9.5	34	25.4	59.0		9.2		40.6	14.0		9.4		40.9	32.7		9.4		29.0	0.5		9.5		38.0	30.9	
9.5		39.9	51.6		8.0		51.3	11.0	L	9.5		42.0	22.4		9.2		39.6	2.3	B	9.1	28	16.8	4.5	K
7.7		40.5	1.6	K	9.5	47	32.7	49.3		9.1		42.7	45.5		9.5	14	10.8	45.9		9.3	29	11.6	24.8	B
9.1		43.6	53.2	K	9.4		34.5	3.4		9.4		49.3	19.4	B	9.2	15	24.8	22.7	6	8.7		18.8	22.7	L
9.1		43.8	56.4	K	9.3		36.3	40.7		9.5	0	13.8	5.0		9.5		35.7	11.1		8.4		22.7	20.0	L
7.5	35	18.4	38.9	R	8.3		53.1	6.0	K	9.0		14.8	7.0	K	9.3		49.5	58.1		7.4		23 3	9.4	K
8.7		20.5	27.3		9.4		55.6	51.0		9.1		16.8	6.3		8.4	16	1.8	19.0	L	9.3		30.1	6.5	
7.0		32.5	33.2	R	7.2	48	7.5	13.9	K	9.4		23.2	53.7		9.5		9.4	7.8		9.3		40.8	28.4	
9.2		41.4	39.4		9.3		16.2	47.7		8.8		42.0	18.3		8.5		39.8	12.0	K	9.4	30	16.3	1.4	
9.4		44.0	48.3		9.0		24.3	59.8		9.5		44.1	38.1		9.5	17	10.6	7.8		9.3		34.3	50.2	B
9.5	36	13.5	1.4		9.4		24.6	1.4		8.6	1	3.0	12.9	K	9.1		38.7	35.5		9.0	31	3.8	2.5	
9.4		20.2	8.3		9.5	49	5.7	48.0		8.9		3.8	27.5		8.7	18	9.8	12.3	K	7.4		17.7	9.9	K
9.3		21.1	38.7		9.5		21.6	17.7		8.9		14.3	38.8		9.5		14.6	40.8		8.4	32	1.7	59.2	K
9.1		54.0	52.3		9.4		30.5	51.0		8.2		15.0	1.1	K	9.0		28.7	29.1		9.5		21.8	22.5	
8.9	37	5.4	4.3	K	9.4		54.1	8.3		9.1		19.9	12.2		8.5		30.6	2.4	K	9.0	33	17.5	1.4	
9.4		13.9	16.0		9.4	50	9.7	28.8		9.4		25.9	3.6	B	8.6		34.8	4.2	K	9.5		20.9	55.3	
9.3		27.5	37.6		9.1		32.8	53.5		9.4		26.9	4.1		8.9		40.8	49.2	K	9.3		21.3	29.4	
9.1		52.0	55.1		6.9		42.7	7.3	K	9.5		50.0	9.7		8.5		52.8	14.4	K	9.2		56.7	27.2	
9.4	38	27.1	27.5		9.5		48.9	34.5		8.6		56.3	55.6	B	8.7	19	3.0	25.2	R	9.3	34	14.9	11.4	
9.5		29.5	22.6		9.5	51	5.2	50.5		9.0	2	14.8	4.2		9.5		31.6	7.9		9.1		17.2	12.8	B
8.5		41.6	13.7		9.5		25.4	58.0		9.5		52.7	23.5		8.1		35.8	25.2	R	9.5		31.3	8.6	
9.4		46.3	46.3		9.4		45.4	12.3		9.5		53.6	13.6		9.0	20	14.6	14.0	R	9.5		34.5	42.9	
9.5		46.9	31.2		9.0	52	4.8	45.2	K	8.0	3	8.3	0.0	K	9.3		20.8	2.4		8.6		35.7	6.1	K
9.5		57.8	24.5		9.2		10.8	46.7		8.6		47.0	11.9	K	9.4		35.3	12.1	B	8.2		40.3	57.5	B
9.5	39	23.7	50.9		9.5		19.6	33.1		9.5		54.7	13.0		9.4	21	1.3	13.6		9.4	35	31.4	33.3	
8.8		25.6	12.5		8.8		27.9	15.6	L	9.5		57.1	13.5		7.8		37.9	50.9	B	9.3		57.5	21.7	
9.4		30.8	47.0		9.4		44.1	14.9		9.4	4	5.6	13.2	B	9.4		41.7	7.4		8.8		58.3	6.2	K
9.3		33.3	55.2		9.2		57.8	24.3		7.5		14.7	40.0	K	9.5		44.7	59.4	B	9.2		59.8	9.7	
9.5		40.9	19.0		9.5	53	16.5	15.6		6.7		28.8	16.5	K	8.7		47.8	12.9	K	9.4	36	18.5	44.0	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ		+33°		6ᵘ—7ᵘ		+33°		7ᵘ		+33°		7ᵘ		+33°		7ᵘ—8ᵘ		+33°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
7.8	36	30.8	10.3	K	9.0	54	12.9	41.8	K	9.4	15	15.2	12.0	B	8.9	37	24.1	8.2		8.9	57	32.9	27.6	
9.1		33.7	32.1		9.5		20.9	15.4		9.1		32.1	44.3	K	9.0		49.8	6.2		8.5		42.0	42.6	K
9.3		42.8	20.3		9.5		58.5	12.2		8.4		33.5	58.8	L	7.5		55.7	22.3	K	9.4		55.2	23.7	B
9.2		43.6	45.9	B	8.9	55	33.1	59.2	K	9.1	16	17.3	7.1	B	8.0	38	1.5	55.8	K	7.8	58	1.5	40.3	K
9.5		55.8	54.8		9.5		37.0	12.8		8.8		21.6	50.9	K	5.3		8.6	46.2	K	9.3		6.8	23.2	
9.5	37	34.1	0.7		9.0		43.4	6.9	K	7.5		33.5	9.0	L	9.5		37.6	23.4		9.5	59	42.5	14.2	
8.3		38.5	56.0	L	8.4		46.4	56.2	B	8.7		40.9	43.6	K	7.3		48.1	11.7	K	7.5	0	27.8	48.0	K
9.3		56.1	55.8	B	7.9	56	27.9	57.3	B	9.3		40.9	29.6		9.4		55.9	2.5	B	9.5		34.1	2.7	
9.3		56.2	9.9		9.1		41.6	54.0		9.4	17	0.1	40.8		8.0	39	3.7	37.1	L	9.5		53.8	48.2	
8.5		58.2	14.7	K	9.3		58.1	33.0		9.4	18	3.6	36.7		9.5		27.4	42.5		9.5	1	30.9	6 7	
9.4	38	9.8	52.3		9.1	57	10.1	16.4		9.4		30.8	22.4		9.4		42.0	16.1	B	9.5		40.0	17.9	
8.8		36.2	12.3		8.0		19.0	57.6	L	9.5		33.9	52.5		9.0		45.6	22.7	B	8.4		56.5	55.7	K
9.3		42.6	25.0		8.1		20.9	1.1	K	9.1	19	9.0	35.0		9.5		47.3	18.1		9.1		56.7	20.3	
8.1		53.5	58.2	K	8.0	58	13.6	24.9	K	8.5		22.6	20.1	L	9.4		55.1	23.4		9.5	3	20.9	22.5	
9.0	40	40.6	23.7		9.1		23.1	4.1	K	9.3		23.8	25.1	B	8.9	40	7.4	41.9	K	9.4		24.0	16.3	
9.3	41	1.1	16.1		9.3		38.8	11.8		9.0		24.6	1.5		9.3		12.5	51.0		8.9	4	16.4	43.7	
8.2	42	5.7	26.8	B	9.2		42.0	21.7		9.5		26.8	48.5		9.3		53.7	33.3		9.1		19.1	3.0	
9.1		20.2	57.0		9.2		43.3	3.5		9.2		31.1	45.0	B	9.5	41	3.3	54.3		7.6	5	1.6	59.3	K
9.4		29 0	11.5		8.0		53.8	29.8	K	8.6		40.2	13.9	L	9.2		29.5	2.0		9.5		10.5	31.6	
9.3		31.1	51.1		9.5	59	55.1	53.5		9.0	20	47.7	23.7	L	9.2		44.5	8.3	B	8.9		26.0	37.0	K
9.0		39.6	17.3	K	9.3	0	25.8	43.3	B	9.0		57.6	0.0	K	6.5		44.6	36.3	K	9.5		28.9	10.7	
8.3		41.7	57.6	L	8.8	1	18.2	34.6	K	9.5	21	7.1	23.4		9.5		52.1	53.5		9.4		41.2	10.7	B
9.5	43	5.5	4.5		9.4		29.1	51.5		8.9	22	31.6	30.3		8.9		52.8	19.4		9.2		48.0	26.4	
8.5		24.2	51.2	B	9.2		52.9	3.1		8.5		58.2	49.4	K	8.8	42	19.3	2.6	L	8.5		57.6	58.3	K
9.3	44	9.6	33.2	B	9.1		52.9	5.3	B	9.5	23	27.3	11.8		9.1		29.5	20.3	B	9.5	6	36.5	39.3	
9.1		19.4	6.5		7.3		54.6	20.8	K	9.2		41.1	30.6		9.4		29.6	25.1		9.4		52.0	44.0	
9.0		32.7	51.6	R	9.5	3	8.0	50.5		7.8		53.4	10.8	K	9.3		46.2	16.0	B	8.9	7	8.4	52.5	
8.3		45.6	10.6	K	9.5		59.8	52.4		9.4		58.7	58.6		8.6	43	18.2	4.3	L	9.3		22.8	40.5	B
8.9	45	17.4	2.0	B	9.4	4	47.2	19.9	B	9.5	24	53.4	12.5		8.4		25.8	55.8	L	9.5	8	17.6	19.8	
9.5	46	3.4	14.9		9.3	5	5.4	12.1	B	7.5	25	0.7	26.0	K	8.1	44	21.0	4.9	L	8.8		19.7	15.7	K
9.2		58.7	1.8		9.3		12.7	22.4		9.0		10.4	32.2	K	9.3		28.6	53.4		9.4		30.3	5.9	
9.0	47	6.3	52.7	K	9.1		21.7	4.0	K	9.2		12.8	51.7		9.3		30.3	31.4		9.4		55.8	55.8	
6.3		28.7	52.6	K	9.4		41.8	45.7		9.2	26	43.4	9.3	B	9.5		47.5	0.1		9.5	9	15.2	36.5	
9.4		41.1	14.9		9.0	6	36.4	24.5		8.0		52.9	9.3	B	9.1	45	11.2	57.3		9.3		30.7	35.9	B
9.2		53.6	18.4	B	9.5		52.0	39.4		9.5	27	4.1	39.8	B	8.5		21.5	30.9	K	7.4		30.9	46.9	K
9.5	48	16.0	40.5		8.5	7	16.3	58.9	K	9.1		12.6	31.0	K	9.5	46	31.3	43.2		9.5	10	4.0	27.8	
9.1		22.7	22.5		7.0		45.1	20.8	L	8.7		28.8	45.6	B	9.5		40.3	50.7		9.5		33.5	30.0	
9.0		28.2	2.7		8.5	8	1.9	17.3	L	9.2		58.5	58.9		9.5		51.3	28.7		9.1		37.7	40.3	
9.3		31.6	12.7		8.8		2.8	26.9		9.5	28	43.5	18.9		9.5	47	20.3	16.0		9.2		49.9	51.8	B
9.5		42.0	10.5		9.5		21.2	43.1	B	7.0		56.6	30.2	K	9.4	48	0.6	21.6	B	9.5	11	43.6	46.3	
9.5		44.1	24.1		8.9		42.1	58.0		9.1	29	52.5	8.7		9.4		9.7	20.8		9.1		44.0	42.8	B
9.3	49	7.1	54.0	B	9.5	9	12.2	31.8		9.0	30	13.8	17.4		7.3		20.2	2.6	K	9.4	12	3.5	49.4	
9.4		40.7	35.0		9.5		49.3	34.0		9.2		15.3	42.1		8.0		42.6	19.6	K	9.5		28.6	50.3	
9.1		54.1	31.7		9.1		51.2	1.3	B	9.5	31	37.7	21.2		9.0		50.4	47.0	B	9.4	13	0.0	26.8	
8.6		58.6	44.7	L	9.3	10	2.1	6.1		9.5	32	1.5	55.0		9.3		54.5	33.7		8.8		26.5	17.9	
8.0	50	5.7	14.9	K	7.2		28.6	51.9	K	8.4		9.2	44.5	S	9.5	49	54.8	48.2		9.4		30.4	58.6	B
8.5		24.7	26.5	K	9.3		47.4	34.7	B	9.2		33.6	5.7	B	8.5		57.5	26.7	K	9.5	14	8.3	52.9	
9.5		27.6	1.1		9.5	11	9.5	51.6		9.0	33	8.7	14.7		9.5	50	9.3	50.8		9.5		52.9	28.0	
9.5		40.6	40.7		9.5		28.6	59.2		8.9	34	1.9	0.4		8.4		25.2	4.9	L	9.3	15	1.0	1.0	
9.3		43.4	33.8		9.4	12	17.7	2.2		8.5		5.1	28.6		9.3		57.3	10.1	B	9.5		23.3	29.0	
9 5		44.0	58.7		9.0		54.3	11.0		9.4		13.7	7.3		9.0	51	19.8	18.8		8.7		26.8	58.4	
9.5	51	21.3	31.3		8.1		59.3	29.3	L	9.0		55.4	34.6		9.4	52	1.5	5.9		9.0		44.2	31.7	
8.8		34.6	19.1	K	9.4	13	26.5	42.8		9.5	35	5.6	24.8		9.4	53	51.2	15.8	B	9.2		56.8	53.6	
7.5	52	11.8	53.2	K	8.9		29.7	33.6	B	9.5		6.5	59.3		9.5	54	12.3	17.3		9.2	16	3.0	6.0	B
9.5	53	11.4	18.6		8.4		32.4	36.5	L	8.9		9.8	54.3	K	9.3		53.4	48.1		9.5	17	4.8	32.3	
9.1		39.2	47.0	B	9.2		43.5	33.5	B	9.5		11.4	46.8		6.8		53.5	26.3	K	9.5		7.5	37.6	B
9.5		39.8	40.4		8.1		49.8	58.9	R	9.4		26.1	21.5		9.5	55	9.9	18.2		9.0		53.7	14.1	
9.5		50.2	52.3		8.2		52.6	26.9	L	9.4		38.9	13.5		9.5		21.4	56.0		9.0		56.5	8.6	
8.4		51.4	29.8	K	8.0	14	28.5	56.2	L	9.5		49.4	50.7		8.7	56	37.3	6.4	K	9.1	18	19.4	25.1	
8.9		51.8	39.4	B	8.5	15	3.7	19.1	K	9.1	36	30.0	43.6		9.5	57	27.4	0.3		9.4		35.7	48.1	B

1701—1760					1761—1820					1821—1880					1881—1940					1941—2000				
	8ᵘ		+33°			8ᵘ—9ᵘ		+33°			9ᵘ		+33°			9ᵘ		+33°			9ᵘ—10ᵘ		+33°	
m		′ ″	′		m	′ ″		′		m	′ ″		′		m	′ ″		′		m	′ ″		′	
9.4	18	45.0	29.3		9.3	39	29.0	31.6		9.5	4	55.0	20.1		9.5	26	41.3	55.3		9.4	56	58.6	52.6	B
9.5		46.8	44.3		9.3	40	3.6	19.3	B	9.2	5	1.6	5.3		9.2	27	4.9	15.1	B	9.5	57	7.4	38.1	
6.7	20	7.8	10.6	L	9.4		43.3	14.9		9.5		11.3	22.8		8.9		27.5	6.3		9.5		9.3	50.6	
9.5		38.5	11.7		9.5	41	9.4	26.5		9.4		14.8	40.3		9.3		55.7	30.0		9.5	59	47.0	31.8	
8.8	22	49.4	38.7	K	6.3		32.2	50.9	K	9.5		51.7	8.5		9.4	28	38.3	45.5	B	8.7	0	42.2	54.8	
8.8		54.5	39.3	K	9.4		53.5	3.4		9.4		53.5	21.6		9.2		46.5	34.0	K	8.5		47.0	4.3	
9.2		55.8	3.6		9.0	42	18.0	46.1		9.0		56.1	59.1	L	9.5		59.1	55.6		8.2	1	14.7	29.5	K
9.2	23	17.1	9.9		9.5		50.9	58.8		9.4		57.4	20.6	B	9.2	29	28.7	3.1	K	9.5		57.4	30.0	
9.5		43.6	3.7		9.5	43	34.6	48.5		8.9	6	42.3	41.9	K	9.5	30	4.2	37.6		9.2	2	31.9	55.8	
7.3	24	2.3	54.5	K	6.0		37.2	1.3	K	9.5	7	33.6	46.2		9.4		43.2	12.0	B	9.4	3	10.2	20.8	
9.5		43.7	41.5		9.4		38.4	43.5		9.4	8	17.7	5.6		9.5		54.8	50.0		8.2		23.6	50.7	
9.2		56.7	23.0		9.5		40.6	55.0		9.5		24.3	22.0		9.5	31	11.5	45.3		9.1	4	7.2	53.5	K
9.5	25	39.8	4.5		9.3		49.3	44.5	B	9.2		27.4	9.0		9.5		35.6	58.3		9.5		16.0	33.5	
9.1		48.7	4.5	B	9.4		57.2	32.4		9.4		51.0	57.0		9.5		50.4	58.3		9.5		17.8	41.3	
9.5		50.9	55.0		9.3	44	4.4	3.6		9.5	9	39.1	37.2		7.5	32	6.2	38.9	K	9.5		21.0	55.6	
8.5		51.5	24.7	B	8.0		52.2	36.1	B	9.4	10	6.8	17.3		9.3		7.1	59.4		9.5		33.5	37.7	
9.5	26	6.3	1.7		9.5		57.3	25.0		9.0		20.7	10.1	B	8.7		54.2	42.8	K	9.5		42.0	38.9	
9.0		28.4	16.9	K	9.5	45	51.4	54.2		9.5		43.3	54.3	B	6.5	33	55.1	39.9	K	9.1	5	52.0	33.3	
9.1		30.0	45.6		7.7	46	2.3	17.8	K	9.4		59.3	8.5	B	9.5	34	59.5	8.2		9.3	7	0.8	3.0	
9.5	27	8.0	54.4		9.0		8.5	31.6	K	9.5	11	6.6	39.6		9.5	35	11.6	11.7		9.3		11.7	5.0	
9.5		24.5	9.8		9.5		19.6	19.8		9.0	12	1.4	46.0		9.5	36	6.4	56.6		9.5		40.0	5.0	
9.5		46.3	52.2		9.3	47	28.1	57.2		9.3		8.6	5.6		9.0	37	36.9	45.8		8.2		56.7	52.7	K
9.1	28	1.5	9.5		9.5		36.2	20.9	B	9.5		14.0	0.3		9.5		38.0	4.8		8.9	8	54.7	15.5	
9.5		16.6	56.9		7.5		42.3	48.6	K	9.5		15.7	4.4		9.5		44.5	21.1		8.4	9	4.8	30.0	K
9.5		29.7	39.0		6.0		59.6	27.9	K	9.2		19.4	51.8		9.5	38	5.5	56.2		9.4		36.5	9.6	
9.1		51.3	9.8		9.3	48	8.0	14.4	B	8.5		24.8	26.0	K	8.8		28.4	49.6		9.5		58.3	58.9	
8.5	29	6.8	10.1	K	9.0		18.3	27.2	K	9.5		29.4	42.1		7.5		43.1	26.8	K	9.5	10	7.2	40.6	
6.5		15.9	18.2	K	9.5		20.1	8.8		6.8		39.5	31.8	K	9.5	39	11.6	56.5		8.3		37.3	7.5	K
8.3		19.4	58.2		8.2	49	23.6	45.1	K	9.5		44.9	5.4		9.5	40	58.2	1.4		8.5		44.1	45.5	
8.0		29.9	39.2	K	9.3		57.9	3.0		8.6	13	23.3	14.7	K	9.5	42	32.7	56.3		9.5	11	16.0	1.2	
9.5	30	25.9	15.8		9.0	50	18.5	59.6		9.0		55.5	5.1		9.5	43	5.8	41.6		9.4		17.5	8.1	
7.2		31.5	2.5	K	9.5		35.1	32.3		7.5	14	21.8	32.6	K	9.0	44	19.3	26.6	K	9.2		17.7	17.0	K
8.6		52.4	10.0	K	9.5		35.3	1.6	B	7.8		25.4	43.1	K	8.5		29.5	59.0	K	9.5		20.5	25.4	
7.0		54.3	14.8	K	9.4		36.6	39.9		8.6	15	12.1	25.2		9.1		45.2	44.0		9.5		44.9	34.1	
9.4	31	2.0	30.1		9.5	51	7.0	58.1		9.4		45.9	7.2		9.5	45	12.3	7.2		9.4	12	3.7	54.3	
8.0		16.4	31.3	K	9.2		43.9	8.2		9.5	16	26.6	41.7		8.7		37.2	17.8	L	8.5		27.6	7.6	B
9.2		21.0	20.3		9.5	52	16.3	38.1		9.0		38.5	29.6	K	9.1		57.4	22.0		9.3	13	48.8	34.1	
6.8		30.4	46.8	K	9.4		50.0	53.7		9.5		46.2	11.2		9.5	46	27.3	38.9		9.1	14	16.2	32.9	
9.5	32	11.0	33.7		9.5	53	49.3	32.4		7.8	17	0.1	23.0	K	9.1	47	5.2	21.5		8.5		29.9	44.9	K
8.9		13.3	56.0		7.5	54	26.2	27.0	K	8.4	18	6.0	41.5	L	6.5	48	1.3	4.0	K	9.3	16	11.4	42.3	
9.3		49.2	59.3		9.2	55	17.0	43.8		9.4		27.4	52.8		9.5		15.2	18.3		9.4		23.9	15.8	B
8.3	33	0.8	54.2	K	8.7		59.9	26.2	L	9.5		44.2	58.8		8.2		37.5	39.5	K	9.1		40.7	11.0	
9.4		23.7	46.0		9.0	56	47.1	0.6	K	9.4		50.3	38.1		8.5	49	40.9	42.7	K	9.5	17	8.5	1.6	
9.2		24.9	15.8		9.0		59.9	27.5		9.0	19	0.3	54.4		9.2		51.0	42.2	K	9.3		20.1	55.1	
8.8		40.5	5.3		9.4	57	18.3	47.9		9.4		41.4	55.2		9.2	50	7.1	4.3		9.5		23.8	49.0	
8.0	34	21.3	14.3	K	7.8		42.9	56.5	K	9.4		51.8	1.3		9.2		13.4	16.5		8.0		24.6	30.6	K
9.5		26.1	2.1		9.4	58	9.2	58.8		9.2	20	59.7	23.2	K	9.5		15.2	42.8		9.5		24.8	38.9	
9.5		30.7	42.3		9.0	59	1.1	1.2		9.1	21	7.3	9.2		8.9		34.0	58.5	K	9.5		31.2	21.5	
8.9		49.6	24.4		9.5		4.3	26.0		8.9		11.5	32.0		9.5		34.0	37.3		9.5		40.7	48.5	
8.6	35	0.5	19.5		6.7		13.8	8.5	K	8.0		15.3	56.7	K	9.0		42.3	8.0		9.5		43.4	56.5	
9.5		20.6	35.5	B	9.1		46.3	29.4	K	9.5		42.8	22.6		9.5	51	17.0	47.3		9.4	18	57.6	13.6	
9.2	36	8.9	32.5		8.9		58.2	34.4	K	9.5	22	5.4	21.9		9.5		29.3	1.9		8.0	19	16.5	46.7	K
9.4		15.3	58.6		9.5	0	21.6	3.2		9.4		9.9	57.8		9.5	52	10.8	32.1		9.5		22.8	14.5	
7.5		26.7	46.0	K	9.4		40.5	25.0		9.4		50.8	42.1		8.5	53	36.4	44.0	K	9.5	20	44.2	39.3	
8.8		39.6	57.2	K	8.5		42.7	58.9	K	8.8	23	0.8	43.9	B	9.3		39.7	21.6		8.3		55.6	43.1	K
9.4	37	47.4	23.0		9.5	1	29.3	59.7		9.3		2.3	41.1		9.5		50.9	12.1		9.4	22	13.4	41.0	B
8.8		48.1	40.8	L	8.8	2	24.0	30.9	K	9.5		52.9	48.8		9.4	54	42.1	56.7		9.0		18.9	41.1	B
9.3	38	1.0	6.1		9.2		28.5	31.9	K	9.3	25	4.1	10.2		7.0	55	32.4	21.0	K	8.4		34.1	40.0	K
9.5	39	22.3	5.4		8.7		59.8	41.9	K	8.2		24.9	38.8	K	6.9		48.5	8.8	K	6.1	23	37.7	7.1	K
9.4		28.5	46.5	B	8.8	3	11.0	35.9	K	9.5		54.9	28.6		8.1	56	47.2	55.4	K	9.0		59.0	34.6	

10ˢ—12ˢ **+33°**

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	10ˢ		+33°		10ˢ—11ˢ		+33°		11ˢ		+33°		11ˢ—12ˢ		+33°		12ˢ		+33°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	24	4.3	59.4		9.4	52	17.2	52.3	9.5	22	28.5	58.6	8.0	53	25.1	46.0	K	9.1	21	43.2	57.9	L
9.5		26.8	33.1		9.5	53	13.9	55.4	9.5		58.4	54.1	9.5		33.6	32.2		9.1		43.5	43.8	K
9.3	25	46.3	15.2	K	9.5		20.4	47.1	7.0	23	22.3	5.8	K	9.5	54	1.2	13.9	B	9.3	22	12.8	10.4	
9.0	26	27.2	53.0		9.4	54	2.5	1.5	B	9.5		37.0	43.7	9.5		10.8	17.0	B	7.3	24	21.5	49.5	K
9.3		41.8	6.7		9.5		21.3	11.3	9.5		49.5	12.4	8.6		37.7	8.4	K	9.5		36.1	35.1	
9.3		49.1	45.4		9.5		48.1	25.0	9.5	24	2.0	22.3	9.5	55	17.1	57.2		9.5	25	20.0	11.7	
9.5	27	32.1	34.5		9.2		51.3	40.5	9.2		50.6	45.0	8.7	56	9.9	51.8	K	9.5		22.1	30.8	
9.4		35.3	52.0		9.5	55	11.1	5.1	9.3	25	22.7	36.7	9.3	57	16.1	46.2		8.6	27	2.4	0.1	K
9.5	29	25.6	54.9		9.5		12.8	12.4	7.7		29.0	55.4	K	8.3		26.1	39.1	K	9.5		16.3	0.5	
9.3		30.2	16.2		9.5		38.4	56.5	9.3		30.7	59.5	9.4		41.0	58.7	B	9.5	28	2.6	35.8	
9.3		32.4	31.3	K	9.5		39.7	39.2	9.5	28	52 3	18.2	B	9.1	58	6.6	10.9		8.8		12.4	50.7	
8.0		35.4	25.9	K	8.5		44.0	5.2	K	9.4	29	3.4	35.7	8.8	0	48.6	14.5	K	9.5		30.3	56.5	
9.1	30	0.2	19.9		8.9	56	1.0	55.7	B	8.8	30	2.5	54.5	K	8.0	2	18.5	53.7	K	9.5		35.7	6.7	
9.5		5.4	25.2		8.6		34.3	46.5	9.4		27.0	34.4	B	9.2		24.2	17.8		9.5	29	24.7	8.4	
9.0		57.0	4.0		9.0	57	6.2	36.8	9.3	31	4.8	25.1		9.2	3	2.9	55.8	K	9.1		39.5	42.0	K
8.5		57.5	35.3	B	9.5	58	29.5	29.2	9.3		13.4	26.1		9.4		22.3	53.1	B	9.5		48.6	24.2	
9.2	31	44.5	29.5	K	9.5		39.3	55.1	9.4		23.9	13.1		9.3		27.1	32.3		8.3		56.7	49.5	B
9.5	33	24.4	57.7		9.4	59	4.1	21.0	9.5	32	11.9	21.3		9.0		29.9	10.8	K	8.3	30	41.0	20.0	K
8.8		54.0	54.2	K	9.1	0	1.3	6.7	8.8		55.6	29.9	K	8.7		33.5	48.3	K	9.5	31	14.1	24.2	
9.5	34	23.6	11.8		9.5		11.5	13.0	9.1	33	9.5	12.3		9.2		40.1	45.9		9.5	33	29.6	45.9	
9.1	35	58.2	15.0		9.5		14.2	28.6	9.3		34.8	7.2		9.5	4	48.5	30.8		8.1	35	0.4	39.9	K
7.3	36	17.0	22.9	K	9.5		58.4	14.1	8.5		49.0	3.0	K	9.5		54.2	54.2		neb		2.1	19.3	
9.4		49.4	55.4		9.0	1	55.5	37.6	9.4	34	14.5	2.0		9.5	5	19.1	11.3		9.4	36	0.8	58.9	
7.4	37	40.7	22.3	K	7.5	2	2.0	19.2	K	9.4		30.2	39.5		9.1	6	41.1	45.9		9.0		52.0	42.7	R
9.3		55.5	5.7	B	9.5	3	18.1	26.8	8.1	35	10.2	30.9	K	7.0		47.2	34.9	K	9.3	37	32.8	8.4	
9.5		55.8	1.4		9.3		52.5	11.7	9.2		40.5	1.9		8.7		49.2	34.9	K	7.8		53.0	53.2	K
9.0	38	0.6	26.4		9.5	4	10.8	11.0	8.8	36	19.1	22.0		8.8	7	47.1	0.7		9.0	39	26.7	51.8	K
9.5		8.3	41.1		8.5		15.8	23.4	K	9.1		58.3	19.2		9.5		50.5	48.0		9.1		44.5	24.8	
9.4		17.5	27.8		9.5	5	44.1	19.6	9.3		59.9	24.1		8.2		51.6	38.8	K	8.0	40	5.7	21.7	B
9.4		25.8	54.3		9.5	6	30.1	3.0	B	9.5	37	42.1	55.0		8.6	8	2.4	27.4	B	9.3		25.0	33.8	
8.7		39.7	7.7	R	8.7	7	16.7	47.2	K	9.4	38	25.9	43.7	K	8.8		23.1	34.9	K	9.0		35.5	37.9	K
9.5		47.3	22.6		9.3		53.0	22.8	9.1		46.4	50.9		9.5	9	6.4	56.9		9.4		39.7	47.7	
9.5	39	27.4	20.6		9.5	8	12.9	13.2	9.3	39	22.5	50.1		5.0		12.2	52.2	K	9.5		56.5	49.6	
9.2		35.2	29.9		9.3		46.0	44.4	9.5		58.1	52.7		9.5	10	5.4	15.0		9.5	41	42.1	22.8	
9.5		57.0	29.0		8.9	9	38.8	39.9	K	9.0	40	0.8	47.2		9.5		5.6	49.7		9.5		56.5	42.0	
9.4	40	6.2	48.5		8.7	10	15.9	52.8	K	7.8		20.5	16 9	K	9.5		9.7	33.6		9.3	43	34.0	22.1	
8.9		12.8	39.2	B	9.5		35.5	14.4	9.5	41	26.0	56.7		9.0		41.3	30.9	K	9.2		45.7	52.3	
9.4		46.5	26.4		3.4		38.5	53.3	K	9.5	42	33.5	7.3		9.5		50.9	16.5		8.5	44	3.6	31.0	K
8.0		50.7	10.7	K	7.8	11	44.4	36.5	K	9.4		42.4	11.7		7.2	11	12.1	33.0	K	9.5	45	19.0	21.0	
9.5	41	45.4	53.6		9.5	13	0.8	20.7	9.5	43	27.5	1.4		9.2		18.2	39.3	B	8.3	46	11.4	4.7	L
9.3		50.7	15.0		9.4		19.6	24.2	B	8.3		37.5	17.1	B	9.1		47.9	33.3	K	9.5		12.5	49.6	
9.5	42	33.2	40.0		9.5		34.5	13.6	9.0		47.0	59.7		9.5	12	19.4	27.8		8.3		51.1	16.6	K
9.4		39.1	47.6		9.5		37.3	19.2	9.5	44	3.5	10.9		9.5		49.3	31.6		9.5	47	26.0	40.0	
9.5		40.8	21.6		9.3		45.5	14.5	9.5	45	7.6	40.0		9.5	14	9.3	42.1		8.2	48	16.5	38.3	K
8.8	43	42.2	12.0		9.5		46.6	51.6	9.3	46	25.1	39.8		7.7		46.8	53.7	B	9.5		41.6	34.5	
8.6		59.0	48.4	K	8.7		50.1	34.4	K	9.4		59.5	16.0	B	8.9		51.9	9.6	K	8.3	49	21.8	19.6	L
7.5	44	0.0	24.3	K	9.0	14	23.0	21.6	9.5	47	13.6	58.3		8.9	15	7.2	25.7	B	9.2	50	43.0	35.1	
9.5		34.6	1.3		9.5		45.4	5.1	9.5		41.1	12.3		9.1		19.6	6.2		9.2		57.7	8.4	
7.5		35.5	46.4	K	8.8	15	50.0	13.3	9.5		41.1	27.0		9.2		53.0	44.4	B	9.5	51	36.1	39.9	
9.1		42.6	45.4	B	8.4	16	28.9	54.1	B	9.5	48	7.5	14.0		9.0		57.0	45.1	K	9.4	52	15.7	22.0	
9.5	46	2.5	8.5	B	9.1		45.6	51.4	9.3		43.8	42.5		9.4	16	25.6	47.1		9.5		22.8	39.9	
9.4	47	5.4	12.3		9.5	17	16.5	15.8	8.0	49	16.2	0.6	K	9.5		59.0	4.3		9.4		39.6	22.1	
9.3		11.3	5.1		9.3		29.7	37.6	B	9.1		45.2	59.6		9.5	17	46.1	0.5		8.2	53	3.4	14.5	K
9.1	48	4.1	34.7		9.2		45.4	8.5		6.7	50	39.4	4.6	K	9.5		53.5	33.1		9.2		4.1	23.5	
9.5		23.5	59.0		9.5	19	13.1	22.7		8.8		51.0	8.4	K	9.1	18	58.3	46.8		9.5	54	50.5	31.1	
9.5		25.8	15.1		7.7		25.4	55.6	K	6.0	51	48.9	58.0	K	9.4	19	53.9	55.4		7.5	55	42.7	13.1	K
9.5	49	2.4	28.1		9.1	20	27.1	44.4	L	9.5		59.1	23.1		9.5	20	31.9	50.0	B	9.5	56	35.0	27.7	
9.5	50	12.5	24.4		9.3		59.7	10.3		8.2	52	43.7	1.6	L	8.8		39.0	16.6	K	8.8	57	1.2	42.9	K
9.4		55.6	43.0	B	9.1	22	0.8	50.2	B	9.3	53	11.6	40.7		9.5		59.4	29.6		9.5	59	22.5	7.1	
9.1	51	26.7	44.0		9.5		5.3	0.8		9.5		22.1	21.2		9.0	21	31.4	43.1	K	9.2		37.9	26.4	

2301—2360					2361—2420					2421—2480					2481—2540					2541—2600				
	12ᵘ—13ᵘ		+33°			13ᵘ—14ᵘ		+33°			14ᵘ		+33°			14ᵘ—15ᵘ		+33°			15ᵘ		+33°	
m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′	
9.2	59	42.2	48.7		7.6	33	56.0	33.8	K	9.5	4	6.9	27.2		9.5	32	23.9	44.0		9.5	1	12.3	26.7	
9.5	0	11.0	41.2		9.1	34	1.0	35.3	K	9.2	5	13.3	34.5		8.3	33	10.2	9.6	K	9.4		13.2	15.4	
9.5		16.9	48.1		9.5	36	12.5	50.6		9.5		19.5	13.5		9.2		28.9	45.5	K	9.5		49.0	38.0	
9.2	1	1.6	45.3	K	9.5		56.5	55.4		9.4		26.6	24.0	B	9.4	34	14.4	23.4		9.0	2	16.7	44.2	
9.5		32.7	47.0		9.4		58.6	5.2	B	9 3		44.5	34.1		9.5	35	39.4	51.3		9.4	3	0.2	5.1	
9.5	3	23.7	22.3		9.1	37	11.5	44.1	K	9.5	6	5.8	58.6		8.6		44.2	37.9	K	7.8		5.3	49.2	B
8.6	4	39.8	4.1		9.5		17.4	56.0		9.2		46.9	37.9		9.5	36	17.5	27.6		9.5		7.1	22.5	
9.4		44.0	13.2		9.5	38	4.8	8.1		9.5	7	40.1	13.5		9.0	38	19.9	49.4	K	8.3		17.0	37.3	L
9.1	5	13.3	28.1		9.4		40.7	1.7	B	8.8		48.2	36.9		6.6	39	9.8	24.6	K	9.3		24.5	47.7	
9.5	6	16.6	29.5		9.4		51.3	34.4		8.8		53.0	24.1	K	9.1		51.0	43.9	K	7.2	4	47.1	37.7	K
7.0		58.2	18.1	K	9.5	39	5.0	8.6		8.4	8	3.1	41.7		8.2	40	24.6	8.0	K	9.2		50.8	54.2	K
9.3	7	21.1	10.4		9.5		54.0	18.9		9.5		51.7	28.3		9.2	41	14.0	32.9		9.3		55.8	34.9	B
9.5		33.3	4.6		9.3	40	47.7	58.9		8.9	9	56.5	16.3	B	9.5		36.8	59.0		9 5	5	9.5	2.2	
9.1		51.5	40.7		8.7	41	24.7	52.1	L	9.1		57.0	17.3		9.5		58.0	38.7		8.7		16.2	52.2	K
9.3		53.2	56.6		9.5	42	9.2	48.4	B	9.0	10	33.1	19.5		9.5	42	0.4	45.2		9.5	6	25.8	38.6	
9.0	8	40.1	4.8	K	7.3		14.0	42.7	K	7.3	11	34.0	55.7	K	9.1		32.7	3.1		9.5		47.3	57.9	
9.3	9	48.4	14.7		9.3	43	28.3	4.9		9.5		52.2	23.5		9.5	43	24.2	4.2		9.5	8	4.0	13.9	
9.2		49.6	6.2		8.2		39.5	13.8	K	9.5	12	1.3	50.0		9.5	44	18.3	21.8		9.4		15.8	31.4	
8.8	10	27.0	5.5		9.0		41.0	33.4	L	9.3		12.7	0.1		9.0		29.7	44.9	K	9.5		29.9	35.4	B
7.5		32.3	15.7	K	9.1	44	30.5	59.1		9.5		31.9	54.4		9.5		32.0	55.4		9.5		34.4	33.7	
9.3	11	0.7	21.9	K	9.1	45	19.2	58.9	K	9.4		35.2	22.1	B	9.0		32.4	37.4	L	3.0		39.6	51.7	K
9.2		14.0	14.2		9.0		50.0	34.1		9.5	13	11.3	9.7		9.5		48.0	36.0		8.5		48.5	51.4	K
9.1		36.6	37.0	K	9.5	47	18.7	23.3		9.4		47.0	2.2		9.0		59.4	33.6	K	9.3	10	11.9	55.3	K
8.5		39.8	32.3	K	8.0		39.0	32.7	K	8.7	14	9.7	57.4	L	9.2	45	59.0	10.2	K	8.9		26.7	15.7	K
9.5	12	46.5	57.0		9.5	49	1.0	28.2		9.2		19.5	34.2	B	8.4	46	41.1	2.1	L	9.3		48.5	47.0	
9.2	13	14.7	30.8	K	9.3		11.7	8.7		9.5		33.0	23.9		9.4		45.2	7.7		9.5	11	42.1	12.7	
9.3		16.5	47.0		9.5		43.5	39.9		8.2		45.0	57.6	K	7.0		52.0	16.7	K	9.5		44.7	28.0	
9.4		26.9	3.0		9.3	50	32.7	22.4		9.2	15	2.2	51.7	K	9.5	47	33.3	21.1	B	9.5	12	16.6	3.0	
9.0		53.7	29.5	K	9.0	51	8.0	31.0	K	9.5		23.9	13.5		9.5	48	30.9	17.0		9.5		22.1	10.9	
9.4	14	37.9	28.0		7.7		32.5	18.2	K	9.5		32.2	39.3		7.5	49	19.8	24.9	L	9.5		31.3	21.2	
9.5		50.9	38.7		9.0		44.7	28 2	K	9.5	16	11.1	55.3		9.5		25.0	33.3		9.1		42.9	15.7	
9.0	15	38.4	18.2	B	9.5	52	2.0	33.7		7.3		24.9	11.0	L	9.0	50	20.5	11.1	K	9.5	13	6.4	37.0	
9.5	17	5.0	15.7		9.5	53	49.3	4.3		9.2		26.7	6.1		9.1	51	9.5	22.5		9.1		23.5	23.3	
9.5		38.2	57.3		9.1		59.8	59.6	K	8.8		51.7	39.0	B	9.2		42.6	21.9		6.8		38.5	3.5	K
9.5		54.8	2.8		8.0	54	41.2	11.7	K	9.5	17	28.5	32.3		9.5		50.0	8.5		9.3	14	9.0	44.3	
9.3	19	27.5	11.2	B	8.4	55	9.5	17.1	K	8.8		29.0	2.7	K	9.5		59.7	24.2		9.5		24.6	39.4	
8.8		54.3	20.4		9.4		10.4	4.6		9.0	18	37.0	44.8		9.1	52	34.4	32.2	K	9.5		40.9	52.9	
9.5	20	28.0	28.8		9.3		18.7	31.9		8.4	19	5.2	27.8	L	9.5		45.0	33.6		9.1	15	2.8	16.9	L
9.5		58.7	3.2		9.0		32.7	31.6	B	9.5		14.3	41.6		9.3		59.6	41.5	K	9.2		27.8	19.5	K
8.7	21	3.2	45.4	K	9.3		34.1	32.6	K	8.7		19.8	16.9	K	9.3	53	6.8	8.9	B	9.1		34.5	50.8	
8.3		18.9	20.5	K	9.2	56	4.5	43.0		9.5		35.9	43.7		9.5		20.3	22.2		5.5	16	0.4	26.7	K
8.4	22	5.3	57.8	L	7.7		50.2	31.4	K	9.5		36.4	25.5		9.5		36.9	22.5		9.2		4.8	35.1	L
8.7		50.0	55.0	K	9.5	57	4.5	12.8		9.5		39.0	32.0		9.3		43.5	43.9	K	9.2		7.8	23.4	K
8.1	24	31.0	15.2	K	9.5		11.7	46.4		9.0	20	27.8	27.5	K	8.9	54	22.0	5.3		9.3	17	57.7	3.2	
9.3		59.2	40.2	B	9.5		17.5	9.6		9.0		59.5	50.2	K	8.8		24.7	47.0	K	9.2	18	20.3	34.6	
9.5	25	53.5	59.2		9.5		17.9	3.4		8.2	21	35.9	37.5	K	8.8		36.5	32.2	B	9.2	19	25.7	38.3	K
9.0	26	32.7	16.5		9.5		49.6	57.0	B	9.5	22	34.9	42.3		9.0	55	42.9	47.3	K	9.4		52.6	49.8	B
9.1		57.8	9.0	L	9.4	58	24.2	26.1		9.3	23	59.5	4.7		9.5		47.4	55.4		9.4		58.2	20.5	
7.8	27	12.4	5.3	L	9.4		49.2	9.6		9.5	25	14.4	58.3		9.5		51.1	26.7		9.1	20	9.8	0.3	B
9.0		28.9	57.1	K	8.9		55.1	5.6	K	8.5		15.6	43.7	L	9.5	56	3.9	4.3		9.0		32.7	37.7	
9.1		32.0	12.7	L	9.5	0	4.0	27.2		8.5	26	15.9	51.0	K	9.5		24.5	56.7		9.4	21	7.0	10.6	
9.5		51.2	21.7		9.5		21.8	30.7		9.5	27	13.3	59.8		9.0		26.9	28.3	L	9.5	22	9.1	37.0	
8.6		58.0	53.9	K	9.3		49.7	17.2		9.5		48.9	33.3		7.1		35.0	50.8	K	9.0		48.5	50.1	
9.3	28	15.5	22.1		9.1	1	2.7	30.2	K	6.8	28	1.8	10.6	K	9.5		46.3	14.2		8.2	24	11.2	6.7	K
9.2		15.5	58.2		9.5		4.3	56.0	B	9.2		2.0	49.1		9.3		50.3	50.7	B	8.7		29.2	50.1	K
9.5	29	42.1	44.0		8.8	2	30.5	38.2	L	9.4	29	2.1	55.2		9.2	57	29.8	54.0	K	8.3		37.0	44.6	K
9.3	30	23.1	30.9	B	9.4	3	27.3	5.2	B	9.5	30	28.6	53.7		9.4	58	9.8	45.3		8.3	25	39.2	5.8	K
8.7	32	41.0	29.3	K	9.5		34.2	52.0		9.0		44.5	55.3	K	9.5		29.0	8.2		9 5		45.1	55.5	B
9.5		57.9	1.9		9.5		41.0	5.3	B	9.5	32	14.4	37.8		8.6	0	23.1	29.2	L	8.8	26	17.0	1.0	K
9.3	33	13.4	9.7		9.3	4	6.4	2.1		9.5		17.8	4.7		9.3		57.0	5.3		9.0		56.9	12.6	K

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	15ᵘ	+33°			15ᵘ—16ᵘ	+33°			16ᵘ	+33°			16ᵘ—17ᵘ	+33°			17ᵘ	+33°	
m		′ ″		m		′		m		′		m		′		m		′	
9.3	27	42.9	34.3	9.5	54	29.8	8.2	8.6	17	44.5	11.1	9.5	41	33.5	9.5	8.0	4	19.2	14.7 K
9.3	28	20.2	48.3	9.5		54.2	41.5	8.7	18	2.9	42.7 K	8.4		45.6	4.7 K	8.2		31.1	57.1 K
9.2		44.5	36.0 B	5.7	55	31.0	44.6 K	9.4		17.5	29.6 B	9.5	42	16.5	4.7	9.5		54.0	2.0
9.2	29	8.3	46.2	9.3		44.0	18.8	9.5		45.7	27.8	9.5	43	35.0	18.4	9.5	5	10.2	21.1
9.4		16.9	55.8	9.5		45.8	5.8	9.5		48.6	59.2	9.5		56.1	56.5	9.5		28.3	0.5
9.5	30	31.9	29.7	9.4	56	15.3	55.6	9.2		54.0	38.0 B	8.2	44	15.6	3.1 K	9.4		31.7	13.2
9.0	31	9.6	3.6 L	9.5		34.0	39.4	9.4	19	8.1	10.3	9.5		42.2	2.2	8.5		47.7	26.1
9.4		30.0	9.0	9.0	57	5.7	49.7	9.5		38.0	5.0	9.4		57.5	28.6	9.4		55.2	15.0
9.1		42.3	17.3 L	9.2		11.0	34.9	9.2	20	11.9	13.5 K	8.3	45	39.3	50.9 B	8.6	6	5.6	7.8 K
9.0		57.5	4.9 L	9.5		29.8	8.6	9.4		55.8	52.2 B	9.5		57.0	34.5	9.1		22.1	11.0 K
8.7	33	35.8	22.0 K	7.9	59	29.6	33.0 B	9.5		58.8	58.1 B	9.1	46	1.1	11.1	9.0	7	5.3	31.7 K
9.5		40.0	58.3	8.9		31.3	51.0 B	9.0	22	24.7	30.4 K	9.4		58.0	35.1	9.0		11.5	21.8 K
9.3		40.9	21.2 K	9.4		43.8	6.8	7.2		27.8	1.8 K	9.4	47	16.0	55.3 B	9.5		12.7	28.2
9.4	34	11.0	8.0	9.4	0	9.1	35.9 B	9.2	23	22.2	15.5 K	9.2		26.3	56.6 B	9.5		27.4	11.4
9.4		50.5	20.1	9.5		10.1	35.5 B	9.5		43.4	35.9	9.2		27.6	5.1	8.5		42.3	5.8 K
9.5		53.7	49.4	9.4		18.3	5.2 B	9.4		45.9	49.0	9.5		49.2	24.4	9.3		59.8	56.5
8.7	35	3.4	13.9 K	9.5	1	37.7	50.8	9.2	24	4.2	25.9 K	9.5		51.2	32.0	9.3	9	1.4	24.5 K
9.4		13.7	56.6	9.0		43.8	28.1	9.5		30.1	7.7	9.0	48	10.3	51.5	9.5		34.4	32.3
9.5		40.0	17.6	8.9		59.8	4.3 K	8.0		36.9	43.8 K	9.5		44.6	4.8	9.3		59.9	24.1 K
9.1		42.4	59.8 B	9.4	2	9.8	50.4	9.0		58.2	3.8 K	9.5		54.3	56.3	9.3	10	54.1	7.5
9.5	36	15.0	28.2	9.5		24.8	58.7	9.5		59.9	48.4	9.5	49	36.2	10.4	9.5	11	36.9	32.7
9.0		16.0	50.0 K	9.5		25.7	5.7	7.1	26	3.6	50.1 K	9.5		37.7	50.7	9.4		47.5	3.8
9.4		33.4	24.5 B	9.2		33.7	54.5 B	9.5		38.5	35.0	9.5	50	22.9	10.7	9.4		51.0	56.8
9.3	37	8.4	11.3	9.5	3	58.0	1.1	9.3	27	13.3	42.1	8.9	51	34.4	56.9 B	5.0		58.2	14.9 L
9.5		49.9	0.5 B	9.2	4	10.6	26 3	9.5	28	36.8	53.8	8.1	52	50.3	55.4 K	9.4	12	21.5	13.9
9.5	38	31.0	24.9	9.3		24.4	0.1	9.5		54.6	30.1	9.3	53	0.7	47.3	9.2		24.9	10.2
9.5	40	13.4	54.2	9.2		51.9	41.4	9.3	29	22.0	32.1 B	9.2		17.4	28.0 B	9.5		25.4	7.4
9.4		58.1	14.7 B	9.5	5	10.3	23.8 B	8.2		33.6	30.6 K	9.4		35.6	17.5	9.0		41.1	33.4
9.5	41	5.0	48.4	9.1		10.8	37.5	9.2		33.9	42.1	9.5		42.2	18.8	9.3		47.0	55.7
9.2		57.6	41.1	9.4		16.0	15.4	8.9	30	22.4	54.5	9.3	54	17.4	25.8	9.5	13	24.9	44.4
8.0	42	5.3	27.6 K	9.5		24.6	48.7	9.5		43.4	37.1	9.3		24.3	13.9	7.8		26.8	0.9 K
9.5		32.7	52.8	9.4		37.7	55.1	9.5	32	4.8	7.9	9.3		56.9	59.9	9.5	14	6.9	45.4
9.4		38.0	50.0	9.4		47.3	58.3	9.3		37.4	59.2 B	9.4	55	32.0	56.5	9.5		11.0	0.8 B
9.5	43	5.6	6.8	9.4		55.5	0.5	9.1		50.9	46.0 K	9.3		32.9	36.6	8.6		23.9	20.1 K
8.8		11.3	15.3 K	9.5		58.2	35.5	9.5		54.2	7.5	9.1	56	0.9	42.7	8.3		31.4	34.8 K
9.5		28.2	13.6	6.8	6	7.5	43.1 K	8.5	33	9.9	48.1 K	9.3		12.4	12.9 B	9.5	15	20.8	1.1
9.5	44	28.8	0.3	9.0		34.4	25.3 B	8.9		17.9	32.9 L	5.1		14.6	47.9 K	9.0		53.5	59.7
8.8		50.2	4.9 K	7.8		43.7	2.2 K	9.2		32.7	22.5 B	8.8		37.2	32.3	9.2	16	2.4	19.7 K
9.1	45	0.9	5.3 B	8.7	7	13.3	36.4 K	9.5		34.2	32.3	9.2		39.5	9.0	9.4		7.3	23.8
9.2		24.4	4.0 B	9.5		15.2	58.3	9.5		36.0	6.0	8.8	58	38.7	19.7	9.3		10.2	4.2 B
8.5		48.6	35.6 K	9.5		31.3	54.2	9.4		39.2	10.8 B	9.0		40.9	18.2	9.3		46.7	5.4
9.5	46	20.0	23.2	9.1		59.1	10.4	8.7		44.2	42.6 K	8.8	59	0.9	14.5 K	8.0	17	20.9	34.0 K
8.7		23.1	4.4 K	9.5	8	10.2	31.8	9.4	34	4.4	8.3	9.5		2.2	49.5	9.5		40.6	8.3
9.5		43.5	30.4	8.8	9	51.8	41.5	8.7		6.3	59.5 K	9.3		3.5	25.7 B	9.0		41.3	49.7 K
9.2		51.2	17.8 B	9.5	10	1.3	58.0	9.0		11.5	44.0	9.1	0	12.1	6.3	8.5		44.7	55.9 K
9.5	47	37.5	28.0	9.5		27.5	46.8	9.1		55.9	18.2	9.1		15.2	55.5	9.5		57.3	8.7
9.4	48	27.3	31.1	9.4	11	27.7	41.4	9.5	35	36.9	33.6	9.0		43.5	24.1 K	9.0	18	26.4	35.1
9.5	49	50.0	48.3	9.1		48.0	30.4	9.5		39.4	54.8	9.5	1	4.6	48.5	9.4		29.9	14.8
9.5	50	57.1	12.0	8.7	12	54.2	23.6	9.3		52.9	34.6 B	9.5		56.2	55.9	9.5	19	1.9	20.7
9.4	51	14.6	9.7	9.5	13	13.6	49.0 B	9.4	36	19.1	35.9	9.1	2	1.5	16.2	9.5		12.7	56.3
9.3		38.9	52.3	9.5		42.0	49.7	7.5		36.2	23.6 K	9.0		26.8	2.5	9.5		19.5	50.2
9.5		52.3	54.1	9.3	14	20.2	9.8	9.1	37	18.0	10.2 K	9.1		48.9	31.8 B	9.3	20	6.4	51.3
9.5		53.5	59.3	9.1		25.3	53.6 K	9.1		39.6	6.3 K	9.4	3	6.6	31.4	9.0		23.6	5.9 K
9.0	52	31.3	27.7	8.7		46.0	24.2 K	9.5	38	40.2	23.7	8.4		26.2	24.7 L	8.7	21	2.1	55.7 K
9.5		48.6	48.0	9.2		58.7	7.1 K	8.8	39	20.6	34.7 K	7.5		31.7	29.8 L	9.5		30.9	26.1
9.5	53	22.9	55.5	9.3		59.7	54.1 K	9.5		27.9	29.6	8.2		35.2	50.7	9.2		43.9	22.1
9.5		33.4	10.0	9.2	15	18.2	15.8 K	8.4		42.9	45.0 K	8.8		47.2	38.7	9.3	22	3.4	5.3
9.4		38.0	37.6	9.0	16	31.1	1.5 K	9.5		57.1	57.6 B	9.0		52.7	40.7	9.5		8.7	13.2
9.5	54	8.3	8.8	9.5	17	29.0	22.4	9.5	40	48.1	54.0 B	9.5	4	2.2	48.3	9.2		58.3	8.4 K
9.5		14.7	44.2	9.0		30.1	27.9 B	9.5	41	4.7	59.2	7.2		15.2	33.2 L	7.7	23	45.8	52.1 L

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ᵘ		+33°		17ᵘ		+33°		17ᵘ—18ᵘ		+33°		18ᵘ		+33°		18ᵘ		+33°
m				m				m				m				m			
8.8	24′	54.3	2.7	9.3	43′	45.5	4.5	9.0	59′	43.9	38.9	9.0	15′	39.8	21.1	B	9.5	29′	11.4	59.0	
9.3		56.3	11.6	8.5	44	4.4	14.8	K	8.7	0	22.4	30.3	K	9.4		41.1	57.3		9.5		59.0	54.1	
9.4	25	25.5	11.9	8.9		5.4	11.4	K	9.4		23.7	12.5		9.5		49.9	1.6		9.5	30	2.2	47.2	
9.4		35.0	7.7	9.4		27.3	30.4		9.0		27.4	35.1	K	9.1		50.7	51.7	B	9.5		13.4	34.1	B
9.5		39.0	8.5	9.1		38.8	31.2	B	9.4		51.9	24.9		9.5	16	14.4	20.4		9.5		20.6	34.3	
8.4		39.0	0.0	K	9.5		38.9	44.4	9.5	1	9.9	11.7		9.4		22.6	34.0	B	9.0		25.0	58.7	B
9.0	26	39.4	28.9	K	9.5		58.9	25.2	8.8	2	4.3	59.5		9.5		25.0	21.0	B	9.5		27.0	58.0	
9.5		47.3	30.8		9.5	45	19.4	24.8	9.3		14.4	19.3		9.5		35.1	18.6		9.5		38.2	44.9	
9.4		55.9	11.5		9.3		25.0	40.6	9.1		44.7	7.5	K	9.2		46.6	31.2	B	9.5		40.2	44.4	
9.3	27	22.9	55.1		9.4	46	3.4	23.0	9.1		45.2	45.7		8.5	17	17.0	32.7	K	9.1	31	1.5	22.9	B
9.4		41.7	42.6		9.4		4.4	28.3	8.7	3	13.4	12.8	K	8.5		17.5	11.6	K	9.4		2.4	12.1	
9.4		53.9	58.7		9.5		12.6	53.9	9.2		16.4	11.4	K	9.5		58.3	35.8		9.1		4.1	8.4	K
9.5	28	9.9	43.4		9.1		16.9	24.8	9.2		35.9	31.4		9.5	18	23.1	52.4		9.5		6.5	57.5	
9.3		52.4	31.0		9.5		24.7	5.4	9.5		51.8	15.0		9.3		54.8	50.0		5.8		19.2	21.0	K
9.5	29	1.2	53.7		7.0		48.0	55.4	L	9.4		55.7	4.3		8.1	19	22.5	6.1	L	9.3		32.3	23.8	
9.1		6.1	18.8	B	8.5		49.7	57.0	B	9.3		59.1	18.5	B	8.4		26.0	44.7	K	8.3		37.0	6.9	K
9.0		48.4	19.3		9.5	47	24.4	54.4		9.4	4	31.4	21.4		8.5	20	26.5	24.7		9.5		39.8	11.2	B
9.5		57.9	22.0		9.2	48	9.9	24.1		9.4		40.9	26.3		9.4		34.0	49.9		9.5	32	32.9	39.0	
9.5	30	39.3	1.2	B	9.3		14.6	11.5	B	8.2	5	12.0	57.6	S	8.5		40.6	4.7	L	9.4		59.6	49.9	
9.5	31	43.4	38.6		9.5		17.1	37.1		8.7		19.9	46.8		9.3		43.5	59.5		8.7	33	1.2	10.1	K
8.1		50.8	50.2	B	9.5	49	12.3	47.0		9.2		25.4	45.1		9.5		56.7	22.4		9.5		10.0	59.4	
9.5	32	0.4	21.7		9.5		34.8	13.1		9.0		34.4	19.6		9.4	21	58.0	12.0		9.3		12.9	17.7	
9.2		6.4	17.0	K	9.5		35.6	20.3		9.4		42.3	42.2		9.4	22	30.5	7.9		9.0		22.0	42.9	
8.4	33	6.9	33.4		8.7		38.4	47.8		6.1	6	27.6	25.8	K	9.5		38.7	54.5		8.9		34.5	37.0	
9.3		40.2	0.4		9.1		44.1	59.2		9.4		39.0	16.8		9.3		43.6	40.7		8.7	34	18.2	45.4	K
9.5		49.4	29.7		9.5	50	2.4	34.5		9.5		41.8	52.9		9.1	23	2.0	0.4	B	9.5		22.3	10.4	
9.4		51.4	45.5		9.4		6.5	3.4		9.5		51.5	40.6		8.8		4.3	36.5		9.4		29.9	41.7	
8.8		57.6	42.0		9.5		10.9	28.9		7.3		53.3	15.0	K	9.3		8.2	52.4		9.1		42.0	7.1	K
8.2	34	4.2	54.7	L	9.4		29.0	10.2		7.4	7	32.8	46.6		8.9		11.5	59.9		9.5	35	2.9	17.5	
9.4		17.7	2.3		9.5		32.5	27.5		9.0		38.1	15.9	K	9.4		38.5	42.6		9.1		3.0	54.3	
9.0		32.9	25.1	K	9.5		52.0	12.8		9.2	8	38.3	2.0		9.5		39.9	13.7		7.3		3.2	33.1	L
8.8		44.6	26.8	K	9.4	51	20.9	46.1		9.3		44.1	18.4	K	9.5		50.6	50.3		9.1		17.4	58.6	K
9.5		45.8	57.8		9.4		49.4	22.1		8.7		51.1	24.9	K	9.5	24	3.7	27.1		9.0		29.9	52.8	K
9.5	35	26.4	45.1		9.0	52	1.4	52.0		8.7		59.4	43.5	K	9.5		4.3	28.6		9.1		38.6	49.6	
9.5		43.4	52.0		6.3		6.4	26.5	L	9.5	9	6.7	10.0		9.0		23.6	2.7		9.3		45.8	52.1	
9.4	36	0.3	0.8		8.5		8.9	49.3		8.7		11.2	46.2	K	9.4		29.0	59 6		9.3		53.8	40.0	
9.4		29.9	22.4		7.8		15.4	51.4	L	9.4		53.6	18.5	B	9.5		38.2	56.3		9.2		57.0	42.7	
9.5		46.3	7.9		9.0		25.9	2.2		9.3	10	20.0	18.0		8.5		55.8	16.0	K	9.4	36	5.1	8.9	
9.5		46.4	25.9		9.5	53	5.2	26.5		9.3	11	3.9	52.6		9.5	25	10.3	46.6		9.5		9.3	46.2	
8.3		50.4	57.8	B	9.2		5.2	30.6		9.5		9.4	2.5		9.1		41.5	1.9	K	7.7		23.9	57.7	K
9.5	37	33.4	41.6		9.4		40.7	9.9		9.5		39.0	17.7		8.2		43.6	49.6	L	9.2		24.8	5.4	
7.0		55.2	3.1	K	9.5		56.8	12.5	B	7.2		48.2	28.7	K	8.7		44.9	17.5	K	9.5	37	42.5	44.4	
9.5	38	33.4	11.7		9.5	54	36.4	3.2		9.3	12	14.8	29.7		9.1		51.6	51.4	B	9.3		43.4	35.5	
6.5		58.9	17.5	K	9.1		47.2	29.0		8.9		15.3	59.9	K	7.5		58.1	32.1	K	9.4		45.3	13.8	
8.8	39	17.0	53.1	K	9.3	55	6.9	53.0		9.5		34.3	23.0		9.3	26	5.4	46.7		9.5		48.2	56.5	
9.2		26.9	36.3	B	5.5		17.4	13.5	K	9.5		40.9	10.2		8.3		31.4	47.1	K	9.5	38	25.0	59.9	
9.5		51.0	9.0		9.0		24.9	19.0		9.5		55.5	46.3		8.5		49 5	0.9	K	9.4		38.4	27.1	
9.5	40	5.4	55.4		9.2		44.6	57.4		9.3	13	0.4	58.1		9.4		51.2	17.0		8.8		48.7	16.9	
9.5		10.9	13.9		6.0	56	17.9	20.4	K	9.0		4.2	10.4	K	8.7		56.3	28.6	K	9.0		51.2	21.6	
9.5		29.4	19.7		9.5		27.9	27.3		9.3		14.6	30.0		9.4	27	2.6	37.5		8.0	39	13.1	50.9	K
9.5		46.0	58.4		9.1		43.9	16.6	K	9.0		31.1	3.8	K	9.3		15.7	27.2		8.6		13.8	52.1	B
9.2		51.6	34.8		9.2	57	3.5	8.9	K	8.9		46.9	59.1		9.4		21.4	28.6		7.7		32.8	2.5	K
9.2		52.4	47.8		8.8		22.0	56.5		8.0		51.6	10.2	K	9.4		29.5	48.8		9 5		45.6	2.9	
9.5	41	28.5	37.6	B	9.5		33.0	8.5		9.2		51.6	20.5	B	9.0		41.0	7.8	K	9.2		51.0	6.9	
8.4		45.6	42.3	K	8.8		39.9	22.4		9.0	14	12.1	31.5	R	8.5		46.7	15.0	K	9.0	40	11.4	57.5	
9.5	42	9.0	0.1		9.5		43.0	12.0		9.5		32.4	27.6		9.5		54.1	54 5		9.5		27.2	9.8	
9.5		30.9	46.8		9.5		44.4	44.0		9.0		38.1	40.5	K	9.2	28	3.6	2.9	K	8.8		34.3	57.5	K
9.2		43.5	4.3	K	9.4	58	15.7	59.2		8.0	15	5.1	43.7	K	9.2		47.8	51.6		9.0		42.0	19.0	
9.5		46.9	17.3		7.2	59	34.2	15.9	K	9.5		11.4	4.5		9.5		48.5	24.4		9.1		49.9	19.5	B
8.2	43	5.1	51.7	L	9.5		42.5	55.1		9.5		39.1	45.4		9.4		56.9	27.1		9.0		51.7	15.3	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ʰ	+33°			18ʰ—19ʰ	+33°			19ʰ	+33°			19ʰ	+33°			19ʰ	+33°	
m	′	″ ′		m	′	″ ′		m	′	″ ′		m	′	″ ′		m	′	″ ′	
9.4	41	20.4 57.6		9.0	50	37.9 57.5		9.5	0	54.1 3.7		8.4	9	35.0 20.2		8.8	18	4.4 45.4	
8.3		31.0 7.6	K	8.3		42.4 35.8	K	9.5	1	2.8 8.2		9.4		39.9 42.2	B	9.2		13.2 51.6	
9.5		55.6 53.3		9.1		43.4 0.3		9.5		13.5 41.3		9.4		40.0 26.6		9.1		22.0 38.7	
9.5		56.4 12.2		9.3		44.4 36.0		8.0		27.9 25.2	L	9.5		44.5 28.8		9.5		54.3 31.4	
8.0		58.8 56.5	K	9.2		47.0 31.2		8.2		30.3 48.7	L	9.3		46.6 23.9		8.9	19	19.1 55.7	K
9.5	42	1.5 20.2		9.0	51	2.7 27.1	K	9.2		32.1 56.4		8.7		54.8 25.9		9.5		26.7 21.4	
9.5		4.1 58.6	B	9.4		19.5 43.8	B	9.5		55.4 44.0		9.0	10	17.0 59.0		9.5		41.3 30.7	
9.4		41.8 27.9		8.6		55.9 57.7		9.5		59.1 57.7		9.3		21.9 43.9		7.4	20	8.2 54.2	K
7.8	43	10.4 36.8	B	9.0	52	0.2 56.2		9.5	2	21.3 49.2		9.4		46.4 41.7		9.5		10.5 20.9	
9.1		13.5 43.7		9.5		12.4 12.3		9.5		37.6 38.9		9.4		48.6 34.3		8.6		57.6 59.7	K
9.4		16.6 14.8		8.8		28.6 14.2		9.4		37.9 8.6	B	9.4		49.7 3.7		9.0	21	16.1 56.4	K
8.7		25.8 51.8		8.7		34.7 39.2	K	9.5		42.1 56.3		9.3		58.8 39.0		9.1		31.3 48.2	
8.2		29.2 9.6	K	9.2		35.8 23.4	B	8.5		46.8 28.9	K	9.3	11	7.9 38.1	B	9.5		31.7 54.4	
8.9		57.0 58.5		9.4		37.5 30.8		9.4	3	3.6 37.0		9.5		9.9 37.3		9.4		40.2 10.5	
7.5	44	6.1 32.3	L	9.3		48.6 55.8		9.3		7.7 35.3		8.9		18.3 8.6	K	9.2		43.2 13.3	
9.3		7.7 27.6	R	9.2	53	13.0 54.8	B	9.1		29.8 26.2	K	9.5		20.1 8.6		9.5		47.0 40.7	
9.1		8.9 5.9	K	9.5		14.0 53.3		9.3		31.5 46.6		9.5		29.7 31.1		8.8		55.3 2.2	
9.4		14.4 34.3		9.3		24.0 19.6		9.5		32.1 58.0		8.9		34.1 16.3		9.0		55.9 19.0	B
8.5		25.9 38.5	B	9.5		38.4 42.5		9.1		34.3 49.7	K	9.4		36.3 42.3	B	9.5	22	5.3 22.3	
9.3		26.2 50.4		9.5		47.5 37.0		8.0		41.3 0.6	K	9.5		40.0 40.5		9.5		14.4 43.1	
9.5		35.5 48.9		9.4	54	3.6 26.6		9.5		47.1 3.4		9.3		50.8 27.9		8.9		17.1 56.5	K
9.4		40.1 12.7		9.5		11.1 20.2		9.2		55.8 50.0	B	9.0		58.2 13.1		9.5		18.3 7.6	
var		44.4 12.2	K	7.9		25.0 54.0	K	9.0	4	10.2 12.6		8.3	12	49.7 53.0	K	7.4		26.2 5.4	K
8.5		45.8 10.7	K	9.5		46.9 2.4		9.3		10.3 35.8		7.7	13	7.5 40.9	K	9.2		36.6 34.3	
9.4		45.9 13.3		7.0	55	5.2 32.6	K	8.2		13.3 5.0	K	9.5		12.7 34.0		9.2		37.5 41.1	
9.5		48.9 38.1		9.2		11.9 0.8		9.5		29.8 58.7		9.1		24.8 7.5		9.4		54.3 4.0	
9.5	45	4.3 52.3		6.8		35.4 35.9	K	8.8		54.4 2.4	K	9.2		26.0 19.4		9.5		55.0 58.8	
9.5		13.5 2.7		8.9		39.3 0.1		9.5	5	1.7 45.9		9.2		36.5 2.1	B	9.5		55.5 41.3	
9.0		33.7 27.2	K	8.7		41.2 21.3	K	9.5		27.0 48.3		6.8		38.3 7.5	L	9.4	23	12.3 5.7	
9.5		39.8 5.1		9.3		45.6 6.0		7.6		30.8 5.2	K	9.4		39.0 3.4		9.0		35.7 31.4	
9.5		52.6 49.4		9.1		50.2 14.8		8.2		33.6 38.0	B	9.1		41.1 56.7	K	9.5		37.5 39.0	
9.5		54.2 9.6		9.0	56	3.3 41.9	K	9.4		36.4 45.5		9.5		47.2 52.7		9.4	24	0.0 29.2	
9.4		59.6 55.8		8.7		12.9 52.7		9.5		59.3 8.4		9.4		49.4 44.3		9.3		0.3 30.5	B
9.4	46	3.4 0.2		9.2		15.1 9.1	B	9.1	6	1.3 0.6		9.1		55.1 14.1		9.5		1.9 29.2	
9.5		3.8 42.5	B	7.1		27.7 24.6	K	9.2		4.3 8.4	K	9.3		56.9 3.0		9.4		16.1 14.0	
9.1		14.9 17.2		9.5		31.6 38.1	B	9.5		8.5 31.6		9.5	14	2.5 8.2		9.5		21.3 4.0	
9.5		43.1 44.2		9.5		32.4 49.5		9.2		16.0 17.8		9.3		13.6 18.1	B	9.5		27.7 9.3	
9.5		43.6 26.6		9.4		43.0 14.8		9.1		25.4 43.5		9.5		20.2 48.6		9.5		32.7 53.5	
9.4		46.6 37.2		9.5		54.9 14.7		9.0		34.2 53.1		8.2		36.6 1.4	B	9.3		41.6 34.5	
9.5		52.3 34.0		9.2	57	4.5 40.9		9.5		42.6 14.0		9.5		39.4 42.0		7.0		51.6 25.6	L
8.7		56.3 11.3		9.5		13.5 40.4		9.1		45.2 53.8		8.4		49.7 54.8	L	8.6		57.3 49.8	K
9.1	47	1.2 21.2		9.5		22.1 57.9		8.9		49.8 28.3		8.8		54.1 16.3		9.2	25	37.0 20.7	K
9.3		15.3 10.3		9.2		37.4 27.3		9.5		54.4 46.1		9.3	15	7.7 38.2	B	9.5		37.2 30.8	
9.5		21.4 0.7		9.2		41.2 51.8		9.2		55.3 6.1		9.5		9.8 28.6		9.4		38.3 55.6	B
8.8		46.6 2.4	K	9.1		47.0 7.1	K	9.5		59.8 18.1		9.5		24.3 49.3		9.2		38.5 40.9	
8.3		55.9 17.7	K	9.5		50.6 30.5		8.7	7	0.6 7.9	K	9.4		43.3 2.0		9.5		39.3 51.3	
9.5	48	20.1 43.9		9.4		52.7 18.2		8.9		5.3 1.7	K	9.4		50.1 56.7		7.0		49.2 9.8	K
9.5		21.4 0.7		9.4	58	15.8 29.6		9.5		11.5 0.9		9.0		53.5 38.5		9.0	26	14.6 37.5	
8.5		28.3 28.9	K	7.2		36.1 56.1	L	9.3		18.7 40.9	B	9.5	16	32.2 39.9		8.8		18.8 29.6	
9.4		44.0 30.6		7.7		49.4 6.5	B	9.2		28.6 57.3		9.5		52.5 3.3		9.0		27.6 4.3	K
9.5		44.4 53.0		9.3		50.0 48.8		8.7		34.3 7.9	K	9.5		54.8 26.3		9.5		34.5 39.0	
9.1	49	7.0 42.2	K	7.5		58.2 52.3	L	9.5		47.6 34.5		9.5		58.9 21.6		9.5		43.1 57.0	
9.3		9.6 48.4		9.5	59	15.8 5.0		9.3		48.9 45.6	K	9.5		59.7 34.0		9.5		44.2 11.3	
9.5		14.0 54.3		9.5		18.0 20.9		9.3	8	8.5 41.9		6.2	17	8.1 14.3	K	9.2		48.1 17.2	
9.5		33.3 57.8		9.5		39.1 57.2		9.5		9.7 14.5		9.2		16.4 30.8	B	9.5		52.5 1.7	B
8.7		35.5 48.2	K	9.5		49.5 59.7		9.2		34.2 53.1	K	9.0		32.2 31.0	B	8.3		58.0 58.7	L
7.0		35.8 46.7	K	9.1		57.6 5.4		9.5		50.2 14.3		9.5		35.6 19.6	B	8.5	27	25.8 5.9	K
9.5		46.5 0.9		8.7	0	9.5 39.2	K	7.3		52.3 57.9	K	9.4		38.8 4.6		9.4		48.9 23.4	
9.5	50	30.2 56.5		8.3		19.6 35.0	K	9.2		58.1 13.1	B	9.5		45.2 7.2		8.2		49.7 10.3	K
8.8		33.1 19.8		8.8		43.8 5.6		9.5	9	6.4 17.5		9.5	18	0.0 55.0		8.3		53.5 45.9	K

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ᵘ	+33°			19ᵘ	+33°			19ᵘ	+33°			19ᵘ—20ᵘ	+33°			20ᵘ	+33°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	27 59.1	50.7		9.1	35 41.0	32.1	B	9.1	45 41.4	3.3		9.5	54 32.2	0.9	B	8.1	1 9.1	3.3	K
9.4	28 13.7	57.7		9.4	52.8	35.8		9.5	45.2	9.9		9.4	33.1	21.4		9.4	20.7	43.4	
9.3	19.0	31.0	K	9.5	36 5.3	3.2		8.6	47.6	36.2	L	8.7	35.7	59.1	K	9.5	34.9	59.4	
9.3	25.5	58.7	K	9.5	8.2	24.6		9.0	50.0	6.9		9.3	41.1	44.4		9.5	40.7	40.0	
8.2	45.1	57.2	K	9.2	41.0	21.2	K	8.1	46 14.5	41.4	K	9.3	57.6	9.4		9.2	44.1	42.5	B
9.5	47.8	29.5		9.3	37 10.5	14.3		9.5	20.8	23.2		9.4	55 13.1	24.4		9.4	2 4.7	13.6	
7.5	29 28.3	28.7	L	9.4	11.8	4.3		9.5	25.3	8.6		9.5	16.9	55.5		9.2	10.6	43.0	
9.5	34.6	57.2		9.5	20.2	13.3		9.5	47.7	27.8		9.5	30.7	8.0		9.3	19.5	1.4	
8.4	37.0	14.4	B	9.5	26.5	41.0		9.5	56.1	57.5		9.5	30.8	22.3		9.5	28.8	9.6	
8.0	42.1	53.0	K	9.3	38 3.5	39.0		9.5	56.4	3.6		8.6	39.6	31.2		9.5	34.4	6.7	
9.3	46.6	36.0		9.5	5.9	24.9		9.5	57.2	9.8		9.5	49.5	29.0		9.0	36.0	42.5	
9.4	30 5.0	55.3		6.7	24.3	48.6	L	9.4	47 9.1	27.1		9.5	56 10.1	16.7		9.5	40.7	15.1	
9.4	8.4	41.4		9.5	39.6	35.7		7.7	18.3	49.1	L	9.5	13.5	4.3		9.3	45.8	4.8	B
9.5	28.5	38.2		9.3	39 1.0	37.0		9.4	31.3	2.3		9.2	22.9	14.4		9.4	47.6	32.9	
9.5	34.2	7.5		9.5	1.4	46.4		9.5	37.7	12.8		8.9	47.0	10.1	K	9.5	53.1	30.7	
8.1	38.8	26.0	L	9.5	13.1	16.0		9.5	40.2	53.3		9.5	50.8	39.0		9.2	56.2	12.7	B
9.5	43.9	21.7		8.7	17.2	11.3		9.3	44.2	10.4		9.2	52.7	21.7		9.2	59.1	14.7	
7.9	49.5	8.3	L	9.4	18.9	31.3	B	7.7	51.6	34.3	L	9.5	55.6	27.6		9.5	3 0.5	28.5	
9.5	31 7.8	26.4		9.0	39.3	49.8		9.2	56.0	6.1		8.5	59.4	6.6	K	9.4	14.3	2.5	
9.5	8.0	18.7		9.4	47.1	57.7		9.2	48 25.5	9.8		9.5	57 8.0	42.0		8.8	17.1	53.1	
9.5	24.2	13.3		9.4	53.9	25.1		9.2	31.3	5.1		9.3	9.8	16.1		9.4	19.6	23.5	
9.5	34.7	32.6		8.4	40 4.6	16.2	S	7.2	38.9	23.7	L	8.9	9.8	13.6	K	9.0	25.7	54.9	
9.5	41.1	55.0		9.5	14.3	28.8		9.4	54.5	27.9		9.3	14.0	23.5		8.3	32.1	14.1	K
9.2	49.1	13.8		9.3	21.8	34.5		8.7	49 3.2	11.6		9.5	31.6	24.9		9.5	34.6	46.2	
9.1	59.2	13.3		9.5	34.2	4.0		9.5	5.0	15.3		9.2	31.7	18.5		7.5	36.0	29.5	L
9.2	32 11.1	55.0		9.2	51.9	17.3		9.5	11.8	47.7		9.3	37.5	55.5		7.3	55.8	15.0	K
9.2	17.2	13.3		5.4	56.3	23.6	S	9.4	12.7	1.0		9.1	42.1	11.8		9.5	4 12.9	4.2	
9.5	17.2	10.8		9.3	56.7	15.8		9.5	25.0	18.3		8.7	42.8	2.6	K	9.5	19.7	28.4	
7.8	33.7	33.8	L	9.0	58.4	23.8		9.4	25.5	21.5		8.8	51.6	7.9	K	9.2	23.9	14.1	
9.3	43.0	52.3		9.5	41 0.3	15.3		9.5	34.3	52.3		9.5	58 3.3	47.0		9.5	30.6	20.5	
9.5	47.4	44.1		9.2	2.8	21.3	B	8.9	35.0	42.2	B	9.5	20.0	57.6		9.2	31.1	32.1	
9.4	52.0	18.7		9.5	10.2	8.2		9.1	38.3	7.3		9.5	26.0	9.7		9.3	32.0	13.1	
8.3	59.6	34.3	L	9.2	11.7	30.8		9.4	41.6	37.5		9.3	26.6	29.0		9.0	32.9	35.1	
9.3	33 0.6	34.3		8.8	32.3	0.3		9.3	43.6	35.7		8.1	37.2	54.6	B	9.2	33.8	35.9	
9.4	2.3	50.1		9.5	52.6	17.5		8.0	50.7	10.5	B	9.4	37.2	53.0	B	8.9	41.5	7.4	
9.3	5.1	54.8		9.4	55.2	7.7		7.7	50 36.1	6.6	K	7.5	46.9	8.7	K	9.1	47.6	22.5	
9.4	13.7	46.8		8.2	42 0.6	56.9	B	9.3	42.3	9.1	K	9.5	51.9	17.5		9.4	47.7	30.2	
9.5	16.4	25.1		9.3	30.4	36.5	B	9.5	47.2	50.8		9.1	53.6	42.1	K	8.5	58.6	12.1	K
7.8	19 8	1.3	K	9.0	31.9	45.6		9.5	51 7.4	19.5		9.3	54.2	22.0		9.2	59.4	27.6	
9.1	33.0	48.1	B	9.5	51.7	45.6		9.3	24.1	15.3	K	9.5	59.4	20.1		8.5	5 0.6	12.1	K
9.4	39.6	44.6		9.5	43 4.4	47.1		9.5	59.4	54.1		9.4	59 1.1	29.4		8.1	2.0	25.6	B
9.5	40.6	45.6		6.9	18.7	4.6	K	8.9	52 1.9	23.7		9.3	2.2	24.9	B	9.3	4.0	52.9	
9.5	44.8	53.7		9.5	48.3	2.9		8.8	5.2	2.3		9.5	16.6	9.2		9.0	11.1	17.4	B
9.5	34 2.8	53.9	B	9.3	44 1.9	23.9		9.2	17.7	31.3		9.5	39.3	18.7		9.3	11.6	51.8	
9.5	4.3	8.8		9.5	1.9	11.3		7.9	18.1	51.1	L	9.5	41.5	21.9		9.0	12.0	56.3	
9.3	18.2	34.5		9.4	9.0	21.4		9.4	24.7	29.4		9.5	49.7	35.9		9.4	18.7	17.8	
6.5	18.2	38.5	L	9.5	9.8	38.3	B	9.5	25.8	19.3		9.3	55.6	14.3		9.4	25.5	33.4	
9.3	24.1	53.7		9.5	14.1	59.7		9.3	28.6	42.0		8.7	57.6	4.4		9.5	31.9	27.4	
9.5	25.7	31.6		9.5	15.2	58.7		8.9	42.1	40.1		9.3	58.5	19.2		9.5	36.6	11.9	
8.5	35.3	1.3	K	9.5	22.8	40.1		8.8	42.4	9.3		9.0	58.6	47.2	K	9.3	37.5	8.2	
9.4	36.8	4.1		9.5	23.1	23.5		9.5	44.6	54.5	B	9.5	0 0.8	16.5		9.5	45.6	8.2	
9.5	43.1	16.0		9.5	23.1	24.0		9.3	53.2	12.1		9.3	6.2	12.4		9.4	46.3	4.7	
9.2	52.7	38.9		9.5	34.3	40.3		9.5	57.5	40.4		9.4	7.5	55.1		7.8	57.4	32.4	K
9.0	54.2	51.8		9.4	40.7	25.9		8.9	53 13.7	29.5		9.0	12.4	52.4	K	9.5	58.2	8.4	
9.5	57.4	45.9		8.4	50.0	59.5	L	9.2	30.0	35.7	B	9.5	18.3	26.0		9.5	6 0.0	54.3	
8.5	35 22.0	36.0		8.9	54.7	18.0		9.2	40.6	39.9	K	9.5	21.5	23.0		9.5	19.5	27.7	
9.5	23.2	50.8		8.7	58.4	20.3	B	9.2	46.6	35.9		9.2	25.7	8.2		9.5	20.5	7.0	
9.4	23.6	32.9		9.2	45 15.6	17.8		9.5	46.6	48.1		9.5	47.0	43.8		9.4	22.9	40.1	K
9.5	39.0	31.1		9.5	28.7	32.6		9.5	54 15.0	2.9		9.4	55.3	1.6		9.2	26.8	14.2	
9.4	39.3	33.7		9.5	33.0	29.1		9.5	26.1	10.5		9.3	1 9.1	25.5		9.1	32.3	59.1	

20ᵘ **+33°**

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	20ᵘ	+33°			20ᵘ	+33°			20ᵘ	+33°			20ᵘ	+33°			20ᵘ	+33°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	6 53.6	48.3		9.3	14 24.1	44.7		9.1	23 51.6	10.1		8.4	33 58.6	28.0	K	9.0	43 56.1	34.9	K
8.1	7 1.6	3.7	B	8.5	24.6	28.9	K	8.7	52.5	21.2		9.5	34 6.7	34.6		9.4	57.2	44.1	
9.4	13.9	15.1	B	9.3	27.0	57.1		8.8	53.3	43.4		9.4	9.4	7.2		9.5	57.5	6.3	B
9.4	17.0	7.5		8.2	50.6	21.5	K	8.3	24 25.6	44.9	K	9.5	22.2	57.7		9.4	44 0.0	42.4	
9.2	17.1	55.7		9.5	59.0	3.0		9.4	35.2	12.5		9.4	24.4	56.8		8.9	32.1	22.7	
8.5	28.3	23.9	B	9.4	15 11.1	55.1		9.3	46.1	55.7		8.7	35 3.1	17.0	K	9.3	32.7	24.7	
8.3	28.7	45.3	B	9.0	15.4	18.6	K	9.4	50.1	58.6		8.4	17.1	46.4	K	9.5	40.9	24.0	
9.4	30.3	1.3		9.5	18.4	50.9		9.5	59.6	46.7		9.5	26.3	28.8		9.5	42.9	52.0	B
8.9	33.2	46.7		9.5	22.1	6.5		9.5	25 23.0	9.2		9.5	30.0	26.0		9.5	42.9	50.7	
9.5	49.0	19.9		8.6	28.0	57.2		8.5	23.1	2.9	K	9.5	30.1	55.9		9.5	46.8	21.0	
9.3	8 6.6	10.9		9.3	37.3	58.2		8.8	27.8	38.8		9.5	34.7	48.5		9.5	54.7	26.7	
9.3	12.5	19.4		9.5	39.5	23.0		8.6	29.6	32.9		8.2	40.6	11.5	K	9.5	55.4	3.0	
9.1	13.8	26.5		8.6	48.7	43.5	K	9.5	33.0	8.0		9.3	44.4	56.8		9.5	55.5	2.4	
9.5	16.5	5.0		9.1	16 21.0	13.3	B	9.4	35.6	4.5		9.4	36 8.9	34.0		9.4	57.1	20.5	
9.2	19.3	1.2		9.3	22.6	12.6		9.0	39.2	11.9	K	9.5	33.2	8.0		8.8	45 5.0	13.1	
9.5	31.4	50.9		9.5	40.2	21.6		9.1	46.9	16.9	K	9.1	41.3	2.4	K	8.4	12.9	57.1	K
8.8	31.7	14.1		9.4	50.0	30.0		9.2	49.6	4.6		9.5	51.8	47.7		9.3	17.0	3.7	B
9.5	40.5	12.9		9.0	54.1	4.5		7.0	55.6	50.8	K	9.5	37 5.6	35.4	B	9.5	27.6	54.8	
9.5	42.2	5.9	B	9.5	55.8	6.2		9.4	26 8.1	2.4		9.5	12.0	22.3		8.7	45.8	0.2	
9.4	9 20.3	0.5		9.4	17 3.3	32.4	B	9.0	10.0	25.0		9.5	17.5	39.3		9.5	51.2	41.0	
8.9	29.1	46.3		9.5	24.1	14.6		9.5	28.8	29.2		9.4	24.4	12.4		9.5	46 15.3	57.5	
9.0	30.6	39.7	B	9.3	39.8	58.0		9.0	59.4	47.7		9.4	26.3	30.2		9.0	16.0	52.3	
9.5	39.7	30.4		9.1	43.6	40.5		8.8	27 0.3	30.7		8.0	27.3	18.6	B	9.5	21.1	38.7	
9.4	42.0	45.2		9.2	52.1	49.6		8.5	7.6	53.2	K	7.8	35.6	20.7		9.4	21.3	42.7	B
9.5	42.4	48.7		8.4	55.6	54.8	K	8.4	32.1	31.5	P	9.3	50.8	12.1		8.2	23.8	15.5	K
8.9	43.0	35.7	K	9.4	18 16.2	58.0		9.5	47.5	6.8		9.1	57.9	2.7		9.1	27.6	9.3	K
6.2	46.6	17.6	L	9.5	16.6	55.8		9.5	59.6	28.5		9.0	59.2	0.8	K	9.3	55.2	40.2	
9.5	54.2	25.2		9.5	27.2	45.4		9.2	28 3.2	7.8		9.2	38 5.8	39.0		9.4	59.1	45.2	
9.4	10 10.7	21.5		9.4	35.4	42.0	B	9.5	8.3	1.1		8.5	6.1	32.9		9.5	47 8.5	0.4	
8.3	13.1	35.3	K	8.3	40.8	45.0	K	9.5	11.7	29.2		9.5	40.0	7.5		8.8	20.6	34.5	K
8.5	13.4	28.9	K	9.5	45.7	52.2		9.5	20.6	14.1		9.1	44.4	37.8		9.1	23.5	55.8	B
9.1	20.8	36.0		9.5	56.6	7.5		9.3	27.6	12.6	K	9.5	52.4	34.4	B	9.1	36.0	5.6	
8.5	39.7	23.5	K	9.3	19 0.0	45.8		9.1	29.5	11.4	K	9.3	58.6	13.2	K	9.3	36.3	52.2	
9.3	44.9	26.0		8.3	15.6	35.1	K	9.3	40.6	43.0		9.5	58.6	25.0		9.5	43.6	23.4	
8.1	11 3.1	30.2	K	9.5	20.9	28.5		9.2	57.6	40.3		8.9	39 39.3	13.8		9.4	58.1	41.7	
9.5	7.4	29.0		9.2	29.0	39.6		9.5	29 6.7	55.6		9.4	42.6	52.8	B	8.3	48 3.4	2.7	B
7.8	19.6	41.3	L	8.9	40.1	19.3	K	9.5	19.9	10.7		9.3	40 20.7	11.1		8.9	12.3	29.2	
9.5	24.5	33.6		9.5	58.0	21.4		8.2	20.8	3.2	B	2.6	21.1	25.4	K	9.3	14.1	12.2	
9.5	37.9	53.1		9.4	58.3	47.6		9.5	21.1	12.9		9.0	24.6	1.0		9.0	24.4	25.0	
9.3	39.8	53.3	B	9.2	20 17.6	29.2		9.5	35.6	30.4		9.3	52.6	16.6		8.5	38.6	52.9	K
9.4	44.7	11.3		9.5	17.9	45.2		9.5	51.1	8.4		9.5	57.8	3.6		9.3	50.9	48.6	B
9.4	58.4	46.8		9.3	43.1	40.8		9.0	30 0.5	22.0		9.0	41 0.5	51.0	K	9.5	49 0.0	3.7	
9.1	12 2.6	4.2	K	9.4	51.3	1.9		9.5	18.6	4.7		8.5	6.3	58.8		8.0	0.6	48.2	K
9.3	13.8	17.3		8.9	54.7	32.6		8.9	27.6	43.3	K	9.3	10.4	44.0		9.5	3.3	47.0	B
9.4	14.0	46.0		8.6	55.1	55.1		9.5	28.2	55.6		9.5	15.0	8.6		7.3	5.6	12.4	L
7.8	16.1	38.5	B	9.3	21 4.4	12.9		8.9	41.4	38.1	K	9.4	15.9	1.4	B	9.4	23.2	56.2	
9.4	18.0	33.8		8.9	9.3	2.2		9.4	57.6	51.4		8.5	16.0	30.2		9.3	31.1	16.1	
9.5	13 3.2	21.2		8.5	16.7	15.8		9.5	31 13.0	26.0		6.0	24.1	50.7	K	9.5	43.0	13.6	
9.3	23.6	10.5		9.0	19.0	0.3		9.2	48.6	50.7	B	9.5	31.3	39.6		7.5	50.8	28.4	K
8.8	26.1	42.1		6.7	29.1	50.6	K	9.5	53.3	26.5		9.4	38.2	51.4		9.5	57.7	57.5	
9.5	31.8	59.9		9.5	36.5	28.4		8.8	32 5.2	16.6		9.5	42 15.1	53.1		9.4	50 13.9	1.8	
9.4	37.0	46.2		9.5	46.4	34.5		9.3	10.1	50.2		9.4	27.6	7.7		9.5	39.1	27.7	
9.4	37.8	25.4	B	9.5	58.9	15.3		9.4	16.6	55.1		8.8	51.2	1.6	B	9.2	39.9	31.1	K
8.7	43.6	43.5		7.2	22 22.1	24.2	K	9.3	34.8	19.6		9.5	54.6	7.9		9.0	44.6	56.8	
9.4	44.5	23.8		9.5	34.2	10.1		9.4	43.9	50.0		9.5	43 0.9	53.2		9.5	46.8	42.5	
9.5	46.1	55.3		9.0	39.8	6.3	B	9.5	53.7	55.2		9.4	3.2	26.9	B	9.5	51.7	10.0	
9.5	55.6	19.0		8.9	23 3.6	54.6	K	9.5	33 14.2	59.1		9.5	17.1	59.3		9.4	52.0	14.1	B
9.5	14 0.5	24.8		9.4	11.8	15.8		9.5	20.1	40.0		9.5	22.6	30.4		8.8	51 7.1	55.5	K
9.5	13.8	7.9		9.5	19.0	50.1		9.0	34.6	47.9	K	9.3	41.4	38.3		9.5	24.4	57.7	
9.4	15.7	13.6		8.7	29.5	1.6		8.6	52.9	31.7		9.5	43.1	6.3		9.4	25.1	52.6	

4101—4160					4161—4220					4221—4280					4281—4340					4341—4400				
	20ᵘ—21ᵘ		+33°			21ᵘ		+33°			21ᵘ		+33°			21ᵘ		+33°			21ᵘ		+33°	
m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′
9.2	51	39.6	54.1		8.4	0	16.6	11.9		9.0	12	22.3	2.6		9.4	25	20.0	1.7		9.4	39	52.4	13.4	
9.5		47.9	28.2		7.5		51.6	33.0	K	9.1		38.2	53.8	B	8.2		27.3	54.5	B	7.5	40	15.2	37.1	K
9.0		49.6	6.5		8.8		52.1	37.8	K	9.0		40.1	11.6		9.5		41.3	6.4		9.4		46.0	56.5	B
9.4	52	10.4	57.9		8.1		56.1	5.7	R	9.0		43.9	43.4		9.0		42.9	32.7		9.5		46.4	10.3	
9.5		25.5	10.4		9.3		56.7	5.0	B	9.5		49.3	58.6		7.7		43.1	11.0	S	9.5	41	39.1	58.5	
9.5		27.0	33.4		9.2	1	16.1	28.9	B	9.5		49.9	53.8		8.0		56.9	33.1	K	9.5		43.4	7.1	
9.5		30.9	50.4		9.0		18.6	36.7	K	9.0	13	9.1	13.4	K	9.0		57.3	58.0		9.1		43.5	50.3	
9.5		31.2	29.2		8.9		23.9	0.1		9.2		18.4	33.8		8.8		58.9	40.9	K	9.5		58.9	32.4	
9.4		44.1	44.0		9.4		34.8	34.7		9.5		35.4	9.0		9.3	26	15.0	44.1		9.3	42	2.9	36.5	
9.5	53	2.6	45.9		9.2		45.2	22.1		9.3	14	4.4	53.5		8.9		37.4	43.4	K	9.2		17.4	3.7	
9.0		14.1	43.7		9.3		52.0	46.4		9.3		8.4	45.5		9.2		48.1	19.8	B	9.4		48.7	25.1	
8.0		14.6	55.1	L	8.7		56.7	46.9		9.5		8.9	50.4		9.3		53.7	48.5		8.5		51.4	55.5	
9.5		30.8	28.6		9.0	2	15.3	5.7		9.5		38.9	25.1		9.3		54.6	23.8		9.5		53.9	21.6	
8.9		33.6	20.3	K	9.3		37.4	45.7		9.5		41.9	15.1		9.5	27	4.9	18.7		9.0		55.9	39.2	
9.5		50.0	6.1		9.5		46.1	39.5		9.4		44.4	9.9		9.5		5.1	13.3		9.3		57.8	23.6	B
8.2	54	34.4	36.5	K	7.2		47.4	2.2	K	9.4	15	15.7	39.6		7.5		12.9	9.5	K	9.5	43	8.5	23.4	B
9.2		49.3	19.9	K	9.4	3	26.9	16.5		9.4		30.0	48.6		9.5		19.7	40.0		9.5		9.5	42.4	
9.5		51.1	41.9		9.5		33.4	48.6		9.1		39.4	16.5	B	9.4		47.8	5.8	B	9.5		25.5	42.6	
9.5	55	1.1	49.3		9.1		57.0	20.8		9.3		45.5	40.4		9.5		55.6	21.0		8.8		28.9	33.8	K
8.5		15.0	50.8	K	8.9	4	5.9	26.5		9.5		47.1	58.2		9.2		55.6	24.8		9.5	44	18.0	45.8	
9.1		52.7	19.3		8.7		7.9	49.9		8.8	16	24.7	23.4		9.5		58.4	46.8		9.5		28.7	8.3	B
9.5	56	11.7	34.4	B	8.9		14.1	40.3		7.7		25.6	13.8	L	9.5	28	21.0	40.0		9.5		34.2	8.1	B
9.5		13.1	33.0		9.5		29.0	25.8		9.5		30.1	32.8		9.2		54.9	0.2		9.5		38.6	8.0	B
9.5		20.6	16.9		9.1		31.4	43.5		9.5	17	3.3	13.0		9.3		57.3	56.4		9.5		50.5	3.3	B
7.5		22.1	10.2	K	9.4		31.6	54.3		9.5		40.0	7.3		9.2	29	9.4	19.9		9.4		51.0	59.8	
8.3		31.3	34.4	B	9.0	5	18.4	43.8		8.6	18	21.4	57.1	K	8.9		40.4	45.2		9.4		53.2	26.3	
8.7		31.6	42.1		9.5		26.2	46.8		8.3		32.2	38.9	K	8.0	30	44.9	4.8	L	9.5	45	12.1	0.1	
8.6		32.6	21.2		9.5		38.5	43.2		8.4		32.9	12.3		9.2		52.0	19.9	B	9.4		25.5	36.1	
9.1	57	0.7	13.6		8.5		42.7	36.8	K	9.5		36.9	58.2		7.2	31	16.4	56.9	K	9.5		33.8	6.7	
8.8		4.1	9.9		9.3		56.1	46.0		9.5		52.1	11.7		9.3		33.3	20.2	B	9.0	46	7.3	52.4	
9.5		14.8	27.5		9.4	6	1.0	44.8		9.2		54.6	56.9	B	9.0		46.4	41.0	K	7.0		7.1	43.4	K
9.5		35.4	22.6		8.8		1.6	46.4		8.0		55.3	4.8		9.2	32	15.7	56.6		9.4		25.0	17.5	
8.2		37.7	59.9	B	9.4		33.7	14.3	B	9.3	19	14.5	24.8		9.3		20.9	19.2		8.4		47.8	6.8	K
8.5		38.0	52.9	B	9.2	7	8.2	20.6		8.9		22.9	43.5		9.0		57.4	17.1	K	9.4	47	9.1	24.3	
8.0		41.4	8.7	L	9.3		10.3	57.2		8.6		29.4	23.5		9.5	33	14.9	41.4		8.0		9.3	34.7	K
9.4		45.7	10.4		9.3		14.9	42.6		8.5		44.0	10.2	K	9.5		38.6	2.3	B	9.0		28.4	12.6	K
9.4		47.6	6.0		6.7		17.2	6.8	K	9.1		44.3	49.7	B	9.1		41.7	59.0		9.1	48	0.4	5.3	K
9.2		51.4	55.7		9.3		27.5	27.6		9.5		47.8	55.5		9.4		45.6	2.5	B	9.5		1.5	43.9	B
9.5		53.6	3.6		9.3		41.8	12.3	B	9.4	20	0.3	4.7		9.1		47.0	12.6		8.0		21.0	48.9	K
9.4		55.1	38.9	B	9.0		47.5	26.5		9.0		6.9	29.3		9.3	34	0.1	22.7		9.4		43.0	52.7	
9.5	58	3.5	5.1		9.3	8	12.1	43.4		9.3		27.9	34.4	B	8.5		13.7	33.7	K	9.4		49.2	57.8	
9.4		4.6	48.8		9.0		18.4	26.1		9.5		41.0	8.6		9.5		22.4	12.0		9.5		49.6	49.6	
9.4		14.1	28.3		7.0		22.0	41.5	K	9.2		41.7	41.4		8.6		26.0	34.5	K	9.3	49	10.5	59.4	
9.5		17.9	45.9		9.0		25.9	12.4	K	9.2		45.3	16.3	B	8.3		55.4	41.6		7.8		54.1	52.5	K
9.4		30.5	13.5		8.2		28.0	42.9	B	9.0		53.4	46.5		8.9	35	3.8	53.5		8.8		57.3	32.4	
8.8		38.8	10.6		9.1		36.4	25.8		9.5	21	11.1	50.0		9.5		20.3	1.2		9.3	50	1.5	26.5	
9.4		58.7	17.6		9.4		50.2	46.1		9.3		23.4	37.2		9.1		30.8	27.5		9.1		17.6	37.9	
9.5	59	17.7	7.6	B	9.5		59.4	22.7		9.5		25.4	8.6		9.1	36	7.9	49.5		9.3		21.2	40.6	
9.3		25.1	20.1		9.3	9	22.0	44.4		9.5		44.5	31.3		8.3		12.4	24.8		9.4		31.0	2.3	
9.1		27.0	46.5		8.0		37.4	16.5	K	9.1	22	8.9	54.2		8.9		14.3	53.5		9.5		44.2	18.5	
9.1		30.3	53.9		9.3		53.9	37.2		9.3		51.9	39.3		9.2		29.2	34.3		9.4		49.8	54.5	
9.1		34.5	34.9		9.5		56.0	4.3		9.5	23	0.0	18.9		9.5		31.4	34.8		9.5	51	22.1	15.0	
8.9		40.9	32.2		8.8	10	16.4	3.4	K	8.3		3.1	33.8		8.8		33.4	46.1		8.3		43.5	25.8	K
8.7		49.2	57.4		9.1		33.6	3.6	K	9.4		25.1	7.4		9.5	37	7.9	56.2		9.2	52	7.0	27.8	K
9.3		52.5	35.3		9.5		37.4	30.3		9.5		26.9	56.1		9.1		15.4	17.5		8.7		15.8	58.0	
9.1		55.4	26.9		9.5	11	15.2	22.7		8.2		30.7	10.2	K	9.3		51.5	27.5		9.5		44.3	40.3	
8.7	0	4.0	29.1		9.3		15.9	52.4		9.0		58.6	42.3		9.5	38	36.0	57.8	B	9.5		45.6	18.7	
9.2		5.1	45.5		7.0		24.1	49.5	K	9.1	24	0.4	40.2		9.2		41.7	15.8		9.5		59.8	36.3	B
9.4		7.7	15.3		7.7		39.2	9.1	K	8.5		8.1	22.0		9.5		54.6	43.0		7.8	53	3.9	28.5	K
8.9		14.3	42.0		9.1	12	10.0	32.6		9.2		8.4	26.5		8.3	39	46.9	36.8	K	9.0		19.6	43.7	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ᵐ—22ᵐ	+33°			22ᵐ	+33°			22ᵐ	+33°			22ᵐ	+33°			22ᵐ—23ᵐ	+33°	
m		′ ″	′	m		′		m		′		m		′		m		′	
9.3	53′ 48.4	2.9		9.1	7′ 26.4	36.2		9.4	24′ 51.2	54.6		9.0	38′ 48.7	12.5	K	9.3	57′ 27.1	8.4	
9.0	48.6	9.5		9.1	8 2.0	12.6	K	9.5	58.1	35.7		9.5	51.2	17.3		8.3	27.9	24.6	
9.4	56.6	44.7		9.1	5.9	10.5	K	7.5	25 9.2	55.6	K	8.8	39 15.0	12.4	K	7.8	58 11.0	19.0	K
9.0	58.1	28.8	K	8.0	50.3	15.6	K	7.3	9.6	29.5		9.4	24.6	4.7		9.4	30.2	8.9	
6.8	59.0	55.3	K	8.5	59.9	48.5		9.5	18.4	50.3		9.5	40 3.7	19.8		9.1	36.5	21.1	
8.8	54 7.7	18.2	K	9.2	9 3.2	23.3		9.5	26.5	45.4		9.4	12.0	30.8		9.3	51.8	1.5	
9.5	28.8	41.8		9.3	7.4	17.4		9.2	27.9	13.3		9.2	12.2	59.2	K	9.4	59 15.5	34.6	
9.5	34.4	37.8	B	9.0	24.6	20.2	K	9.4	38.8	39.7		9.2	22.8	7.6	K	8.9	52.7	47.8	
9.0	37.9	12.3	K	7.4	49.5	0.9	K	7.7	54.9	4.1	B	9.5	46.1	13.2		9.3	0 10.5	37.0	
9.5	55 11.2	21.3		8.8	57.4	54.8		7.5	59.9	29.5	K	9.4	41 17.4	9.6		9.5	29.8	47.8	
8.6	24.3	35.0		8.0	10 7.2	48.2	L	8.2	26 37.8	11.9	K	9.3	30.2	16.3	B	8.9	1 1.2	21.5	
9.5	55.1	14.3		8.9	44.9	29.6	K	9.3	46.2	21.3	K	9.1	36.7	3.8		9.3	10.6	7.0	
9.3	56.5	54.8		9.5	11 29.6	22.0		8.8	48.9	33.2	K	9.0	37.7	53.7		8.8	23.4	7.8	
9.5	57.6	20.8		9.5	30.5	47.5		9.4	51.4	49.6		9.5	42 55.2	18.0		9.3	23.5	55.3	B
7.7	56 6.9	40.6	K	9.5	40.8	54.9		9.5	27 0.0	22.1		9.0	43 11.5	29.8	K	8.5	46.3	25.9	K
9.5	34.5	54.2		9.0	47.9	11.9		9.3	2.1	39.6		9.2	18.2	35.7	B	9.5	2 53.1	23.1	
9.0	57 48.1	51.0		7.5	12 52.5	48.3	K	9.5	29.1	35.0		9.0	44 1.3	41.3		9.4	57.0	43.8	
9.5	58 2.5	25.3		9.5	13 24.5	17.7		9.2	36.4	17.7		8.5	6.1	41.9	K	9.5	3 12.4	7.5	
9.5	3.7	0.6		9.5	29.1	28.1		9.5	36.8	4.7		7.3	21.6	36.4	K	9.5	28.0	58.8	
9.5	43.1	19.5		9.3	14 13.8	18.8		9.5	36.9	23.5		9.5	39.2	54.8		9.5	28.2	52.5	
8.0	49.6	45.5	K	9.5	27.8	0.5		9.4	28 47.9	8.3		9.5	48.8	48.8		9.5	48.7	55.9	
9.4	59 1.5	1.8		9.1	15 2.7	10.8		9.0	49.7	42.0	K	9.5	45 4.9	2.9		9.5	4 26.6	4.2	
9.5	0 4.9	25.8		9.5	16.9	17.3		9.1	29 13.0	19.5		9.5	7.7	12.0		9.5	5 15.8	57.2	
9.4	9.8	51.6		9.4	19.0	12.0	B	9.3	23.5	29.8		9.0	13.4	56.8		9.0	16.9	35.9	
9.4	15.6	6.8		9.1	34.6	25.0		9.1	27.5	52.6	K	9.5	17.0	7.0		9.5	18.5	6.5	
9.5	18.5	56.4		9.4	36.1	30.5		8.9	39.8	54.1	K	9.1	34.8	51.7		9.5	45.0	37.2	
8.8	25.9	53.0	K	9.0	47.1	16.0	K	9.0	43.3	20.4		7.0	47 18.2	26.3	K	9.5	6 26.7	55.8	
7.5	40.6	48.6	K	9.5	47.4	5.0		9.5	55.4	4.9		9.3	50.5	3.0		8.8	27.0	49.0	
8.5	49.1	41.3	K	9.0	52.8	38.8		9.5	30 4.8	25.3		8.3	53.7	55.1	K	9.3	39.4	39.3	
9.5	1 5.0	5.7		9.1	53.2	47.5		neb	27.4	40.0		9.5	48 11.3	45.4		8.9	42.2	28.5	B
8.2	10.6	21.6	K	9.3	16 24.3	18.9		9.5	51.7	10.3		9.5	27.9	28.8		9.5	7 40.7	57.0	
9.5	34.2	1.6		9.4	32.4	56.9		9.5	59.4	43.3		8.8	49 30.8	6.1		9.5	8 20.3	0.0	
9.4	35.8	9.5	B	9.4	44.8	24.0		9.5	32 10.7	53.9		9.5	36.7	47.9		9.0	46.8	44.9	
9.3	38.0	33.4	B	9.1	17 18.5	54.6		9.5	17.1	30.7		8.6	49.6	8.7		7.8	55.9	54.5	K
9.4	45.0	26.8		9.5	23.4	19.2		9.5	17.5	9.6		7.5	52.8	35.3	L	9.3	9 25.0	32.0	
9.3	58.6	36.0		8.3	35.2	51.7	K	8.7	36.3	8.1	B	8.6	54.7	26.0		8.6	27.3	40.3	
9.2	59.3	13.7		8.5	41.1	40.0	K	9.5	54.4	5.9		9.1	50 5.3	6.1		9.0	31.1	53.0	B
8.6	2 24.7	47.1	K	9.5	59.0	21.0		9.3	33 21.3	59.9		9.1	51 21.7	8.7		8.5	35.6	6.0	K
9.1	40.1	24.7		8.3	18 5.3	53.0	K	9.5	21.4	44.7		9.3	51.2	53.2		9.5	45.1	53.5	
9.5	59.6	36.8		9.2	44.0	35.9	K	9.2	26.4	4.9		9.3	54.5	35.3		9.5	10 19.4	9.9	
9.0	3 5.0	4.4		8.1	19 17.9	54.4	K	9.3	29.5	21.1		6.8	52 9.2	17.6	K	9.5	30.0	21.3	
9.2	24.2	53.4		8.6	49.0	48.8		9.2	54.9	10.3	K	9.3	21.3	7.9		6.8	42.0	15.8	K
9.2	26.3	35.4		9.3	56.2	20.9		9.3	57.4	29.9		9.4	46.5	43.9		8.9	49.8	11.6	K
8.8	29.1	32.6		9.1	20 34.5	53.3		9.5	34 16.6	1.3		9.5	54.8	25.3		9.4	59.2	36.0	B
9.5	4 10.4	13.3		9.0	53.8	5.0		9.5	30.5	9.6		8.2	53 2.5	5.2	K	9.5	11 6.0	45.3	
9.5	28.2	28.6		8.3	21 3.2	14.9	L	9.4	54.0	30.8	B	9.2	40.0	18.8	B	9.1	35.8	20.7	
9.5	34.5	33.3		9.5	12.0	20.4		9.5	35 3.5	15.6		9.0	54 11.3	38.4		8.8	46.2	1.0	
8.5	5 15.0	36.0	K	9.5	27.6	1.5		8.5	18.0	15.0	B	9.5	20.0	10.8		9.5	12 42.7	28.5	
8.8	21.8	0.1	K	8.8	55.7	45.5	K	9.5	37.2	14.2		9.3	24.6	56.3		9.1	49.5	35.2	B
9.5	37.5	8.5		8.8	56.5	59.5	K	9.4	36 5.1	44.8		8.5	29.3	44.7	K	8.3	52.2	56.5	K
9.1	37.9	25.0		8.3	22 24.6	47.9	K	9.2	19.8	28.0		8.5	33.1	30.4		8.1	13 24.7	15.0	K
9.5	55.6	39.7		9.5	25.4	31.8		9.1	20.9	5.2		6.8	55 3.0	49.8	K	9.1	28.0	9.9	K
9.2	6 9.2	14.6		9.3	32.4	14.4	K	8.5	37 9.3	9.7	K	8.8	36.2	24.1	B	8.8	14 26.1	10.6	B
9.5	16.9	33.6		9.5	59.7	11.0		9.3	13.4	40.2		8.2	39.6	50.2	K	9.4	30.3	16.4	
9.5	20.9	48.2		9.5	23 24.1	36.9	B	9.1	31.6	58.1		8.0	56 10.7	50.2	K	8.9	54.2	51.6	
5.8	23.6	53.5	K	9.3	30.0	57.4		9.3	38 0.4	11.8		9.3	22.4	21.2	B	9.2	15 16.1	59.3	
9.5	37.7	42.5	B	9.2	38.2	57.8		9.3	3.0	14.5		9.4	24.9	29.0		9.3	41.7	49.8	
9.5	45.0	48.9		9.2	54.4	56.5		9.2	14.9	50.9	K	9.2	31.5	9.8		9.3	42.2	45.3	
9.3	7 3.6	48.5		9.5	24 44.9	42.5		9.1	35.1	57.3		9.5	57 16.3	57.6		8.3	56.0	34.8	
9.3	26.0	59.7	B	9.4	47.8	44.5	B	8.1	38.1	33.6	K	9.5	21.0	15.2		8.8	16 6.1	10.9	

4701—4728				4729—4756				4757—4784				4785—4812				4813—4837			
	23u	+33°			23u	+33°			23u	+33°			23u	+33°			23u	+33°	
m				m				m				m				m			
8.4	16′ 26.″9	31.′4	B	9.5	25′ 18.″4	3.′4	B	9.0	34′ 26.″5	12.′3	K	9.2	43′ 18.″5	48.′1		8.3	52′ 43.″8	22.′6	K
9.5	53.0	19.0		9.2	24.0	39.0		8.9	44.2	44.3	K	8.8	40.8	9.8		9.5	55.8	10.8	
9.5	54.0	32.7		9.3	24.8	43.9		9.0	55.8	26.1		9.1	44 3.0	50.6		9.5	56.3	8.5	
9.5	17 0.6	50.9		8.2	29.2	30.9		9.5	35 6.6	5.4		9.5	38.9	33.0		9.5	53 5.4	9.3	B
9.5	15.2	1.8		9.5	53.0	21.2		9.5	42.4	20.6		8.3	55.2	12.3	K	9.5	52.4	1.8	
9.5	48.0	27.2		8.7	26 15.9	54.2		9.3	44.7	57.5	B	8.0	45 12.8	38.2	K	9.4	54.6	35.1	B
8.8	18 10.7	30.0		9.5	25.3	55.7		7.0	52.9	55.9	K	9.5	46.4	35.8	B	8.5	57.9	13.5	K
9.2	12.3	36.2		9.4	31.7	1.2		9.5	37 15.8	22.3		9.1	56.6	41.2	B	9.5	54 44.7	27.3	
8.8	48.5	54.7		9.0	27 22.8	13.7		7.7	33.2	53.9	K	9.5	46 6.0	30.3		9.5	55 14.8	44.7	
9.5	20 28.6	46.6		7.5	23.8	33.7	K	9.0	53.4	11.6		9.5	50.4	54.5		9.3	44.6	10.6	
8.0	36.0	38.6	K	9.5	51.1	58.9		9.4	38 52.2	58.2		9.5	55.8	44.0		8.9	53.6	8.4	K
9.5	47.5	47.0		9.4	59.2	1.1		7.5	39 5.8	23.6	L	9.5	47 22.3	27.5		9.5	56 9.3	45.2	
9.0	55.8	18.9		9.1	28 3.5	54.8		9.4	16.9	3.1		8.5	36.7	16.8		9.0	57 0.4	19.3	K
8.5	21 37.8	47.3		9.5	15.8	17.8		8.7	23.4	1.9		8.6	40.3	5.8	K	9.5	6.9	53.1	
9.3	22 4.5	31.4		9.2	17.9	53.0		9.0	25.8	18.9	L	9.5	48 0.3	38.6		7.0	13.8	27.4	K
9.5	5.9	9.5		8.3	29 58.6	50.7	B	9.5	40 13.4	9.0		9.1	20.2	19.5		6.3	17.2	51.6	K
8.8	7.8	50.0		9.5	30 16.8	57.9		7.5	19.3	43.7	L	8.7	22.2	57.8	K	9.0	36.5	4.2	K
8.9	13.7	50.7		9.5	42.5	35.4		8.9	27.4	58.9	K	9.5	49 2.8	22.6		8.7	44.3	10.6	K
8.8	30.1	12.0	K	9.0	59.2	59.8		9.5	32.0	14.0		8.6	50 1.3	16.4		9.5	56.7	0.1	
9.4	23 19.4	22.0		9.2	59.2	17.1		9.5	43.3	32.3		9.0	20.8	56.1	K	7.6	58 2.8	17.5	L
7.2	40.6	1.8	K	7.8	32 3.3	54.8	L	9.0	41 2.0	2.3	B	9.0	23.5	52.5	K	9.2	26.3	22.7	
9.1	54.3	31.0		9.4	3.9	19.9		9.5	2.3	43.7	B	9.2	28.0	36.4		9.3	56.9	12.3	
9.5	56.6	44.5		8.3	20.4	15.0		8.8	11.6	23.8	B	9.5	28.7	44.3		8.3	57.5	48.0	K
8.6	24 20.8	44.9	K	9.5	28.3	55.0		9.5	42 26.4	5.7		9.2	51 42.3	26.8	K	9.1	59 45.8	31.1	
9.3	49.9	42.4	K	8.5	33 2.6	0.9		9.5	49.9	21.6		9.5	52 0.8	19.8		8.5	53.5	53.5	K
9.5	58.0	4.0		9.1	47.5	58.0		9.4	43 10.4	10.6		9.3	16.8	13.6					
9.5	25 7.0	47.9		9.5	34 5.3	54.6		8.5	11.5	39.5		9.1	20.4	30.2					
9.1	14.1	25.5		9.4	22.2	22.5	B	9.0	17.2	0.7		8.8	27.8	48.8	K				

Zone +34°

1—40					41—80					81—120					121—160					161—200				
	ou		+34°			ou		+34°			ou		+34°			ou		+34°			ou—1ᵘ		+34°	
m	ʰ	′ ″	′		m	ʰ	′ ″	′		m	ʰ	′ ″	′		m	ʰ	′ ″	′		m	ʰ	′ ″	′	
9.0	0	2.7	54.8	K	9.5	14	43.2	34.1		8.4	28	38.7	59.1	K	8.4	42	6.4	32.5		9.5	52	44.6	19.7	
9.5		11.3	18.3		6.8		45.9	43.5	L	9.5		44.8	37.5		7.7		8.1	11.0	L	9.0		46.7	57.0	
7.2		58.5	7.0	K	9.2	15	4.9	27.5	K	9.5		59.4	36.2		9.0		9.3	3.0	K	9.5		54.3	15.8	
9.5	2	2.1	1.6		9.5		41.9	8.9		9.4	29	3.1	58.4		9.2		20.1	5.2		8.3	53	25.4	47.1	K
9.1		5.9	51.6		9.1		50.5	1.5	B	9.0		21.7	59.8		9.5		27.5	0.6		8.3		28.6	35.7	K
8.9		7.8	29.8	K	8.9	16	39.5	0.2	K	5.8		36.6	36.2	K	9.1		31.3	45.9	B	8.5	54	24.0	53.6	L
9.5	4	1.4	14.4		9.5		41.3	52.8		9.1		44.4	23.5	K	8.3		46.1	39.0	B	8.1		42.2	49.3	L
9.1		1.8	21.8	K	9.4		45.7	59.3		9.5		51.0	5.8		9.5		49.5	9.6		9.3	55	8.2	36.4	
8.8		4.9	14.6	K	9.5	17	19.8	38.6		9.5		55.1	38.1		9.0	43	11.1	39.5	K	9.0		11.4	27.3	
8.6		40.6	53.5		9.1		36.2	2.3		9.5	30	16.3	6.1		9.4		17.3	32.2		8.2		55.6	23.4	K
8.2	5	25.3	48.4		7.0		39.3	14.3	L	9.5		25.0	28.4		9.2		21.7	55.7		7.2		58.3	40.5	L
9.0		32.8	32.2	B	8.7	18	14.2	22.7	K	9.4		40.9	54.7		9.1		23.6	45.7	B	9.1	56	21.1	18.2	K
7.5		33.6	29.2	K	7.8		14.8	31.3	K	9.5		50.2	28.1		9.5		49.8	1.3		9.2		42.7	25.9	
8.5		41.3	59.7	K	8.5	19	2.2	6.8	L	9.5	31	9.8	13.8		9.5	44	4.7	32.9		9.4	57	25.0	14.4	
8.5		58.2	6.3		9.5		33.3	26.1		9.4		24.1	50.1	B	9.5		50.3	38.0		9.4		30.0	23.5	
8.4	6	9.5	1.5		8.1		51.8	46.9	K	9.0	32	16.6	52.6	K	9.3		55.4	26.7		9.5		38.4	0.7	
9.5		15.3	58.7		9.5	20	21.4	28.5		9.3		52.8	40.2		8.8	45	47.5	56.6		9.2		39.3	23.8	
7.3		41.3	36.0	K	9.4		23.9	35.4		8.9	33	15.0	39.8	K	8.9		52.6	20.0	K	8.8		46.2	27.0	K
9.4		44.1	40.6		8.0		36.9	28.2	K	9.5		28.8	5.5		9.4	46	5.4	30.5		8.9		52.7	19.7	K
7.3	7	36.7	4.5	K	9.4		38.6	57.3		9.5		45.7	57.8		8.9		13.1	15.9	K	9.2		52.7	55.4	
9.5	8	2.8	47.0		9.5		43.2	44.9		9.4	34	3.1	3.4		9.5		24.0	58.4		7.5	58	6.6	44.1	L
9.5		37.2	26.7		9.5		53.0	32.5		9.5		34.3	41.9		9.5		36.5	0.6		7.7		44.6	47.5	K
9.5		39.1	17.0		9.4	21	57.8	27.9		9.5		35.3	45.7	B	9.5		55.8	11.2		7.5		46.2	23.0	K
8.5		40.2	22.0	K	8.4	22	30.2	49.9	L	9.3		35.5	57.4		9.0	47	22.1	18.0	B	9.3		58.0	59.8	
9.4	9	3.3	19.7		9.4	23	2.0	16.1		9.2		45.6	51.7		9.3		41.9	52.4		9.1	59	2.5	11.3	
9.5		23.0	20.0		9.5		3.8	19.1		9.4		55.6	45.0		8.9		48.2	55.4	K	9.4		28.9	9.1	
9.0	10	42.8	18.1	K	9.3		6.1	13.6		8.9	35	14.7	12.4	K	9.2	48	17.8	23.4	B	9.1		30.0	0.8	
9.5		43.3	36.2		9.3		10.9	53.4		8.0		21.6	33.9	K	7.0		18.3	26.2	K	9.3	0	14.9	28.7	
9.4		44.8	41.1		9.0		13.2	12.6	B	9.5		40.1	43.0		8.0		57.6	37.0	K	9.3		18.3	47.8	
9.1		46.6	32.7	B	9.5		45.8	39.3		9.3	36	5.5	19.2		9.4	49	9.9	17.8	B	9.5		37.6	40.2	
9.5	11	51.0	59.3		9.5		58.8	25.4		9.5	37	28.2	0.5		9.5		13.4	27.7		9.5		46.1	57.5	B
9.5		52.3	21.1		9.2	24	22.8	49.5	R	9.5	38	21.2	40.5		8.0		13.8	5.0	L	9.4	1	2.1	0.5	
9.4	12	0.0	56.1		6.5		32.5	10.8	K	9.4		44.7	1.9		8.3		54.9	35.3	K	9.4		6.3	5.9	
9.5		7.5	12.8	B	9.0		41.3	39.3	R	9.5		50.4	3.0		7.9		58.6	12.1	L	7.4		14.0	1.7	L
9.5		7.8	35.6		9.5	26	24.3	54.3		9.1	39	4.3	3.8		9.0	50	10.5	22.8		9.4		14.8	32.5	
9.2		8.3	31.4		9.5		40.0	2.9		8.8	40	11.2	3.8		9.5	51	43.4	35.4		8.9		18.5	8.3	
8.4		14.3	48.4	K	9.5	27	13.8	1.7		8.0		17.7	57.0	L	9.4		53.6	47.1		9.3		27.9	28.1	B
9.5		57.5	16.0		9.4		41.2	9.2		9.5	41	11.2	26.3		9.3	52	3.5	15.3	K	2.2		37.6	50.5	K
9.0	13	30.2	50.4		7.7		45.8	51.1	L	9.5		29.9	20.4		9.5		17.3	17.5		8.5		54.2	55.7	B
8.9	14	27.7	0.5	K	9.5	28	21.8	4.5		9.0		36.4	38.5		7.3		20.5	54.3	L	8.4	3	9.4	12.9	B

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+34°		1ᵘ		+34°		1ᵘ—2ᵘ		+34°		2ᵘ		+34°		2ᵘ		+34°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.0	3	9.8	7.4		9.2	23	13.1	0.5	K	7.9	43	12.1	56.6	K	3.0	0	57.2	18.0	K	8.5	19	40.2	50.9	K
8.1		33.7	20.1	K	9.4		14.1	25.8	B	9.5	44	8.0	49.6		8.8	1	19.8	7.9		8.3		45.0	39.2	K
8.9	4	8.2	24.6	K	9.5		18.8	26.0		9.5		22.2	12.2		9.5		41.7	28.5		9.5		45.4	16.4	
9.3		20.2	51.5		9.5		26.6	39.5		9.5		24.7	21.4		9.4		49.7	7.4		9.4	20	13.5	3.0	
9.5		30.0	20.8		6.6		53.5	3.6	K	8.4		42.7	35.0	L	9.5	2	5.1	11.0		9.5	21	26.9	2.4	B
8.1		31.5	24.6	B	9.0		57.7	8.7	K	8.6		54.6	5.2	K	9.4		10.6	48.0		9.1		47.0	53.6	
9.4		35.5	50.0		9.4	24	18.5	2.9		8.5	45	14.9	22.1	K	9.5		12.8	55.8		9.3	22	18.6	29.2	
9.5		36.2	26.7		9.5		49.3	32.8		9.5	46	14.0	22.3		9.4		22.9	10.3		8.0		22.8	16.8	K
9.5		46.0	38.8		9.5	25	23.8	32.8		9.1		30.0	53.7		9.5		26.6	25.3		8.8		23.5	45.1	B
8.8		49.2	4.8		7.2		36.0	51.5	L	8.9		39.4	52.6		9.1		44.8	16.1		9.4		27.7	51.5	
8.6	5	30.3	9.6		9.5		51.5	39.8		9.5		59.4	15.9		9.1	4	14.9	38.6	K	8.8	23	6.9	58.5	
9.5		50.5	13.2		7.0	26	20.7	23.0	K	9.5	47	17.0	13.9		9.2		36.6	30.3	K	9.4		13.0	12.8	B
8.7	6	2.3	15.2		8.8		21.8	35.5		9.4		25.9	14.9	B	9.5		44.3	32.6		9.5		17.9	38.6	
8.5		4.0	49.3		9.3		35.8	31.7		9.5		34.3	35.1		9.5	5	34.8	44.1		7.8		21.4	2.1	L
7.8		55.3	6.9	B	9.3		55.6	57.3	K	9.1		41.2	16.4	K	9.5		36.7	53.8		9.5		39.1	57.6	
9.5	7	12.3	8.5		9.0	27	19.4	2.2		9.5		50.5	37.0		8.5		46.1	13.3	K	9.3		40.5	2.5	
8.8		40.4	6.1		8.8		44.8	13.6		9.5	48	2.3	2.3		9.4	6	6.2	36.8		8.4		46.6	37.5	
9.1		49.0	20.4		7.9	28	9.5	23.4	L	8.9		9.2	57.1	K	9.3		22.4	15.2	B	8.9		55.6	33.1	K
9.5	8	0.9	52.3	B	9.4		9.6	16.4		9.3		12.2	22.3		9.3		48.7	45.8		9.5		59.3	36.3	B
8.3		3.3	27.3		8.1		21.4	53.1	L	9.5	49	7.8	57.4		9.4		56.5	55.7		9.1	24	19.4	45.9	
9.2		46.2	7.7	K	9.5		31.7	47.8		9.4		11.9	45.1		9.5	7	19.4	34.1		9.4	25	20.4	39.5	
9.5		50.9	26.4		8.9		42.4	1.5		9.4		38.8	0.9		8.4		23.4	29.1	K	7.0		30.5	30.3	K
9.3	9	18.9	37.5	B	9.0	29	34.8	34.2	K	9.5	50	0.4	30.2		9.0		27.0	21.9		9.1		31.6	12.1	
7.7		21.3	40.5	K	7.8		49.8	36.6	K	9.5		19.1	54.3		8.2		51.9	46.7	K	9.4		32.5	55.9	
9.5		26.8	20.0		8.8		49.8	53.8		9.2		36.9	24.2	K	9.2	8	18.0	10.7	B	8.7		45.2	31.4	K
9.5	10	17.3	14.0		9.5	30	8.3	49.6		9.5		45.5	32.9		9.2		58.1	17.7		9.5	26	38.1	49.2	
8.9		24.9	1.9	K	9.5		14.2	3.4		9.5	51	2.9	2.6		8.5	9	31.9	38.9	K	9.1		44.2	6.9	B
9.5	11	37.7	47.4		9.5		32.5	8.8		9.5		12.7	9.6		9.5		57.8	3.3		9.4		52.0	9.5	
9.3		49.2	34.0		9.5	31	21.2	9.5		9.4		13.5	43.9		9.4	10	13.9	10.0		5.6	27	0.2	3.0	K
8.0	12	1.8	12.4	B	9.5		21.8	35.4		9.5		22.4	22.0		9.5	11	17.0	57.8		9.0		3.4	27.0	
7.8		4.3	21.6	B	9.5		32.9	41.2		9.4		46.8	53.8		9.4		26.9	39.7	B	7.3		4.1	5.0	K
9.0		8.6	50.0		9.5		45.4	46.8		9.5	52	8.5	1.4		9.2		55.2	17.0	B	9.0		26.9	6.3	
8.8		20.7	51.4		9.5	32	5.4	2.9		9.5		23.6	12.4		9.2	12	28.9	23.6	K	9.1		30.7	50.7	
9.5		57.4	44.7		9.3		45.8	8.0		7.8		32.4	35.7	K	8.9		41.8	29.4		8.9		33.2	53.9	K
9.5	13	34.0	44.0		9.4		47.5	39.8		8.9		43.2	45.7		9.2	13	2.8	1.5		9.4	28	40.8	50.6	
9.0		55.4	6.6	K	9.5	33	8.6	47.1		9.5		59.3	28.0		9.3		3.1	45.5		7.5	29	1.7	31.9	K
9.4	14	13.9	18.4		6.0		42.5	30.3	K	9.5	53	14.4	50.1		9.2		19.4	35.0	K	9.4		7.9	57.8	B
9.5		35.1	55.5		9.0		47.8	2.6		9.5		26.6	33.8		9.3		22.0	7.2		9.3		20.0	58.0	B
9.1	15	30.9	0.5	K	9.4	34	12.5	17.8		9.5		27.5	17.9		9.5		40.9	20.9		9.5		27.1	1.2	
9.5		56.5	46.7		9.5	35	35.7	54.4		9.1	54	23.5	32.3		9.5		55.7	38.2		9.4		44.3	31.7	
9.5	16	15.4	37.8		9.4	36	13.5	15.0		9.2		42.4	31.1		9.4	14	14.6	5.2		9.5		44.7	13.6	
9.5		24.1	23.1		9.5		29.3	35.6		8.9	55	8.1	10.5		9.5		16.5	46.2		9.1		44.8	46.6	K
7.9		55.0	58.5	K	9.5		48.1	53.3		7.8		13.5	54.2	K	9.2		18.4	0.2	B	8.8		56.5	38.8	K
9.4	17	22.4	46.8		7.3		57.1	59.1	K	9.5		35.4	15.0		9.4		42.8	19.4		8.3	30	2.7	34.5	K
9.5		26.2	17.5		8.7	37	4.5	8.2		9.5		48.3	16.6		7.0		46.1	47.0	K	9.1		31.0	51.9	
9.1	18	35.3	23.5		9.5		44.0	0.5		9.5	56	13.8	21.7		9.5		50.9	23.4		9.3	31	0.6	39.4	
9.5		53.1	26.3		9.4	38	10.4	25.9		9.5		15.6	0.4		9.5	15	54.6	1.1		8.6		3.4	48.0	K
9.3		56.1	33.9		9.2		27.7	26.1	B	9.5		40.0	58.4		9.5		58.1	44.3	B	8.8		40.2	39.7	K
9.2	19	3.4	36.4		9.5	39	0.0	56.4		9.5		51.5	14.4		9.4	16	30.5	59.2	B	8.8		40.4	1.2	
8.5		28.3	38.9	B	9.3	40	35.2	21.0		9.3		57.6	21.7		9.5		31.1	46.4	B	9.3		47.4	46.5	B
9.0		32.9	1.7	K	7.8		48.2	11.1	L	9.5	57	8.7	8.0		9.5		37.2	39.6		9.5	32	5.0	46.6	B
8.7	20	41.4	17.2	K	7.8		49.7	43.2	B	9.5		14.5	15.1		7.2		43.7	22.0	K	8.9		8.4	12.7	
8.7		42.3	9.5	K	9.5		54.7	27.8		8.8	58	0.8	48.3	K	9.0		56.3	36.0	K	9.4		9.7	21.2	
9.5	21	17.5	47.8		9.5	41	13.9	1.5		9.5		5.4	58.3		9.2		58.7	15.5		9.5		23.8	30.4	
9.5		30.9	2.8		9.5		43.5	1.8		8.8		23.2	40.5		8.6	17	26.6	11.8	B	9.2		37.1	56.3	
9.5		53.7	44.0		9.5		58.8	53.0		7.3	59	17.5	51.4	L	9.5		42.3	16.7		9.5	33	11.4	53.4	
9.5	22	24.6	15.5		9.2	42	1.2	11.5		9.5	0	5.0	42.6		6.9	18	3.1	57.0	K	9.5		15.2	15.8	
9.2		38.4	4.7		9.0		16.8	27.9		9.4		20.9	8.4		9.3		16.4	6.9	B	9.5		15.6	7.4	
9.5		49.3	50.0		8.9		54.3	1.3		8.3		24.7	59.5	K	9.4		31.5	10.9		8.9	34	21.3	48.6	K
9.5		55.0	42.3		8.0		57.7	44.2	L	9.1		29.0	16.3	K	8.6	19	3.3	44.8	K	9.2		33.0	54.3	

501—560				561—620				621—680				681—740				741—800			
	2ᵐ		+34°		2ᵐ—3ᵐ		+34°		3ᵐ		+34°		3ᵐ		+34°		3ᵐ		+34°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.4	34	48.0	48.1		9.5	52	41.5	18.7		8.5	10	19.9	37.9	K	9.5	25	0.5	20.4		7.0	40	55.8	22.6	B
9.4		52.3	10.3	B	9.5	53	28.7	34.1		9.0		32.4	40.3	K	8.5		27.7	51.4		9.4		57.1	23.3	
9.2	35	2.3	52.8		9.5		29.5	45.9		8.0		35.0	56.7	K	9.0		52.0	36.6		9.4	41	7.7	17.7	B
7.3		20.9	30.5	L	9.5	54	44.4	28.7		9.0		57.5	32.4		8.5	26	6.9	37.9	K	9.3		7.7	13.4	B
9.4		31.0	47.6		9.3	55	8.0	40.7		8.9	11	23.0	43.1	K	8.0		13.2	59.1	K	9.2		32.6	33.0	
9.4	36	8.7	42.8		8.7		18.9	50.1	K	8.1		33.9	43.5	K	9.5		16.6	40.0	B	7.2		34.9	39.5	K
9.4		12.3	49.7		8.2		58.4	13.1	K	9.0		54.7	25.5		9.5		37.5	2.2		7.8	42	8.4	9.4	K
9.4		17.9	35.4	B	9.4	56	5.5	25.2		9.5	12	8.2	47.9	B	9.3		46.8	0.2		8.9		16.3	41.2	B
9.3		45.2	2.2		9.5		13.5	24.2		9.3		33.0	12.0	B	7.5		47.9	26.7	L	9.0		20.2	25.9	
7.2	37	10.1	49.9	L	9.2		32.5	44.8		9.1		38.9	34.1		9.1		48.0	24.5	B	9.3		21.2	55.4	
9.0	38	2.7	13.6	K	9.5		39.9	35.0		9.5		47.5	16.8		9.3		58.0	19.5		8.9		27.7	26.9	
9.5		3.0	14.0	B	9.4		42.2	31.0	B	9.5	13	36.8	26.3	B	9.3	27	36.4	15.2		9.1		28.7	26.5	
6.5		10.2	56.6	K	9.0	57	18.5	40.7		9.5		50.0	49.9		7.4		41.5	34.1	K	9.0		34.1	3.4	
9.2	40	8.5	30.0		8.7		28.3	53.1		9.4	14	12.0	25.9		9.5		53.6	55.1		9.3		51.5	14.8	
9.3		10.2	35.5		9.2		35.6	59.4		9.0		43.1	5.2		8.0	28	13.0	40.7	K	8.9	43	6.9	1.4	
9.3		16.5	6.7		8.8		47.8	8.5	K	8.6		52.5	20.7	K	9.0		20.4	40.3		9.5		14.3	35.4	
8.1		21.1	58.5	B	8.8		47.8	54.0		9.0		56.0	57.3	K	9.5		35.9	51.0		9.3		30.7	50.9	
9.5		40.6	17.8		8.3		50.9	33.1		9.4	15	6.0	49.7		8.2		40.7	29.1	B	8.8		31.6	2.7	
8.5		50.0	42.8		9.5	58	9.0	6.6		8.0		8.8	58.7	K	9.4		46.0	21.7		9.0		56.9	27.7	
7.8		50.8	33.8		9.5		50.0	48.0		8.2	16	4.5	36.5		8.7		54.1	42.0	B	9.3	44	7.4	11.7	
9.2	41	12.2	9.5		8.3		56.2	40.4	K	9.5		12.3	2.5		9.5		54.6	54.9		8.5		11.4	37.3	
9.5		18.3	31.2	B	9.3	59	14.7	26.9		8.4		19.2	17.5		9.3	30	0.0	33.8		8.8	45	16.0	53.1	
9.1		18.5	23.1	K	9.2		15.1	3.8		9.4		40.4	23.1		9.5		16.0	51.0		9.5		25.9	31.6	B
7.0		56.2	47.5	L	9.1		17.5	10.8	K	9.5	17	2.1	31.0		9.5		40.8	1.6		9.4		50.3	32.1	
9.4	42	6.4	33.5	B	8.0		42.7	53.3	S	8.0		12.2	48.9	L	9.2		46.1	10.1	K	9.5		54.4	5.1	
9.3		9.2	2.0		9.3	0	25.8	4.9		8.5		35.2	14.2		9.3	31	13.2	44.9		9.0		59.7	43.3	
4.2		36.1	27.7	K	9.0		32.0	12.3	K	9.0		36.9	33.4		9.4		13.2	39.3		8.8	46	35.0	7.3	
9.5		45.2	52.5		9.0		37.5	19.3	K	8.8		44.2	15.5		9.4		28.5	30.7		6.2	47	8.9	39.4	K
9.4	43	2.2	54.3	B	8.2	1	14.7	55.8	K	9.5		45.2	56.1		9.3		50.5	11.7		9.5		21.4	1.6	
8.9		32.7	52.1	B	8.5		41.4	27.3	K	8.9		57.5	29.3		9.5	32	7.1	35.1		9.5	48	4.0	56.1	
9.3		40.5	0.6		9.3		42.5	45.9		9.5	18	1.5	35.5	B	9.0		8.7	53.1		9.5		13.7	32.5	
9.3		58.2	33.7		9.5		43.2	48.6		8.2		6.4	56.1	L	8.4		9.4	31.0	K	9.5		34.7	50.9	
9.4	44	35.2	11.8		9.2	2	9.1	59.3		8.2		21.0	17.3	K	9.4		27.5	27.6		7.0		44.1	24.1	K
9.5		47.9	3.5		9.3		15.9	41.7		9.1		23.6	55.4		9.3		44.4	50.3		9.5		57.5	9.2	
9.5	45	24.4	49.0		8.2		19.7	32.0	K	9.5		26.4	56.1		8.8		45.9	35.4	B	8.8	49	53.8	49.1	K
9.2		26.2	41.8		8.0	3	19.5	26.2	K	9.1		30.5	18.3		8.9		47.3	31.9	B	9.3		54.9	6.7	B
9.5		47.3	24.4		9.5		25.2	54.5		8.5		41.5	32.8	K	9.3	33	22.2	36.8		9.5		56.8	58.5	
9.5	46	20.5	31.2		9.5		33.7	25.2		9.5	19	1.4	33.1		9.2		33.0	22.8		9.5	50	1.6	55.9	
8.4		27.9	21.7	K	7.8		40.9	46.9	K	8.3		2.7	46.8	K	9.3		42.0	50.5		9.5		5.4	10.2	
8.2		35.5	10.6	B	9.4		46.5	20.4	B	8.3		13.7	12.7		9.4		53.0	21.1		9.4		14.9	55.5	B
8.8		40.8	58.9	K	8.3		53.9	27.9	K	9.3		28.1	41.7		9.5		54.0	24.1	B	9.3		35.5	56.7	
8.5		46.7	56.1	K	9.5		53.9	4.8		9.5		36.0	50.5		9.0	34	29.9	51.1		9.5		40.5	9.2	B
9.5	47	14.9	16.2		9.0	4	38.0	34.5		9.4		55.0	59.9		9.5		52.5	12.5		9.5		40.6	3.8	
9.4		30.4	51.7		7.7	5	9.6	49.1	K	9.2	20	6.4	10.3		9.5	35	10.4	30.0		9.3		50.9	41.8	B
9.2		36.9	33.7		9.5		22.0	7.6		9.2		46.6	2.9		9.0		44.5	44.1		9.3	51	5.7	28.8	
9.3	49	2.8	2.4	K	8.3		36.7	15.2	K	9.2	21	17.0	51.7		9.3	36	22.4	30.8		9.5		43.5	14.9	
9.4		18.0	41.7		9.5		38.0	35.8		9.5		46.9	47.9		9.3		45.1	46.4		9.4		50.6	51.0	
9.0		42.3	58.7	K	9.2	6	9.1	5.6	B	9.1		51.4	34.5		8.8	37	31.8	59.5	K	9.3		51.5	56.5	
9.1	50	4.8	17.5		9.4		13.1	0.8	B	8.8	22	21.4	11.0	K	9.3		55.2	18.3		9.0	52	9.9	6.6	
5.4		6.3	35.7	K	6.5		58.4	8.9	K	9.5		21.9	50.0		9.2	38	9.5	53.3		9.3		24.3	54.2	
9.5		28.1	53.8		7.5		58.5	29.7	K	9.0		39.5	17.3		9.0		15.9	22.9		9.0		33.4	57.2	
8.0		32.6	45.8	K	9.0	7	3.5	33.7	K	9.2		41.4	22.1		9.0		29.6	35.0		9.0		41.7	46.7	
9.5		53.1	19.8		9.3		5.4	21.3	B	9.5	23	0.0	17.7		8.5	39	0.4	8.1		9.2	53	15.5	8.5	
9.1		59.0	32.9		9.5		9.5	35.1		6.0		27.2	57.4	K	9.5		10.7	26.8	B	8.0		18.8	59.1	K
9.0	51	0.0	11.5		9.2	9	1.0	14.5	K	9.5		44.9	11.8		9.4		28.2	31.6	B	8.5		24.4	44.7	K
9.5		18.7	45.5		9.5		7.3	54.8	B	9.4		49.2	7.4		9.5		28.3	26.0		8.5		31.4	55.1	B
8.3		19.4	35.2	L	9.1		17.5	16.2		8.0		55.9	54.7	K	9.5		30.7	26.2		9.3		38.5	13.8	
9.4	52	6.6	1.0		9.4		40.2	53.8		9.0	24	5.9	51.5	K	9.3		45.0	11.1		7.5		51.7	24.9	K
9.4		16.0	13.2		9.3		40.5	9.4		9.5		19.5	12.0		8.3	40	12.7	28.0	K	9.4		55.2	54.7	B
9.5		33.9	57.6		9.5		58.4	56.5		9.3		46.0	23.1		9.0		18.4	41.2		9.1	54	13.3	44.5	B

+34° 3ᵘ—5ᵘ

801—860				861—920				921—980				981—1040				1041—1100			
	3ᵘ—4ᵘ	+34°			4ᵘ	+34°			4ᵘ—5ᵘ	+34°			5ᵘ	+34°			5ᵘ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	54 16.7	26.0		8.9	11 12.7	25.2		9.5	45 23.5	4.0		9.5	6 50.4	11.2		8.4	17 23.5	38.4	
9.5	30.1	57.2		9.5	48.8	3.7		9.3	46 12.1	7.4		9.5	7 33.4	20.3		9.5	23.9	42.4	
9.4	49.7	59.4		7.5	12 2.4	13.1	K	9.5	27.9	19.9		9.5	54.2	2.2		9.2	29.6	11.8	K
9.1	55 47.6	59.1		9.5	16.5	28.0		9.2	29.7	56.5		9.5	54.5	20.6		9.4	32.7	2.1	
9.5	50.7	29.0		9.5	20.6	59.6		9.5	47 8.6	24.5	B	9.2	58.7	4.7	B	9.2	39.4	18.0	K
9.3	55.5	45.0		9.5	58.1	54.2		9.5	48 2.5	9.6		9.4	8 5.4	20.8		8.8	57.6	37.5	
8.5	56 13.4	45.9	B	9.5	13 25.7	36.0		8.0	21.3	2.5	K	9.4	23.3	1.4		9.5	58.9	23.0	
9.3	18.7	41.2		9.0	14 5.0	21.8	K	8.9	31.9	43.9		9.5	38.4	10.6		6.0	18 2.8	21.1	K
9.3	31.2	14.0	B	9.3	7.9	35.2	B	9.2	33.6	38.0		9.1	50.5	54.7		8.5	6.9	24.4	K
9.2	32.6	0.3	L	9.3	10.5	34.0		8.0	43.1	54.0	K	9.4	56.3	5.5		9.5	13.4	45.2	
9.5	34.8	24.2		9.4	14.7	47.0		9.5	57.6	48.3		9.5	59.4	58.7		8.3	14.3	35.8	
9.4	50.0	57.3		7.5	31.5	53.5	L	8.0	49 8.0	9.7	K	9.5	9 19.0	40.9		8.4	15.7	45.9	
9.5	57 6.4	16.0		9.4	42.3	58.3		9.3	28.3	58.2		8.6	19.4	14.7		9.5	28.5	20.0	
9.1	58 10.7	23.9		7.2	52.0	54.2	K	9.4	51 39.0	16.3		7.8	36.5	43.9	L	9.1	31.2	17.7	K
9.1	26.6	33.0	B	8.7	15 14.7	10.8		9.5	58.2	33.4		8.7	38.4	24.7		9.4	32.3	45.3	
9.5	26.8	3.6		9.5	44.2	42.5		9.3	52 30.5	36.4		9.5	39.2	18.9	B	9.5	32.5	16.1	
8.5	35.1	45.3	K	8.9	16 4.8	3.9	K	9.5	53 7.0	47.2		9.0	39.4	5.6		6.7	48.4	34.2	K
9.5	50.5	30.5		8.0	46.7	23.6	K	9.2	54 40.5	14.8		9.3	54.3	15.3		8.8	19 1.3	32.7	K
9.2	59 4.8	58.6	K	9.5	47.1	39.1		8.5	44.9	25.0	K	9.5	10 2.9	3.1		9.0	3.5	53.4	
9.5	30.2	41.6		9.3	17 7.8	36.0		9.3	55 12.2	48.7		9.4	9.4	15.2		8.7	9.0	44.3	
9.1	41.7	21.8		9.5	53.7	0.0		9.5	30.2	56.7		9.0	18.5	53.9	B	9.5	35.5	54.2	
9.5	0 38.4	21.1		8.0	18 38.1	41.6	K	8.5	48.4	4.0	K	9.0	47.7	16.5		9.5	47.3	40.6	
9.1	54.2	48.7	B	6.8	19 41.6	56.4	K	8.5	51.0	39.8		9.5	11 0.2	23.5		8.7	59.2	43.1	
9.0	1 15.6	22.1	K	9.5	20 36.5	18.1		9.5	56 32.4	5.2		7.9	15.3	6.7	K	7.1	20 3.4	59.5	L
9.5	32.5	23.2		9.0	56.3	47.5		9.5	40.1	45.5		9.5	24.4	9.9		8.4	4.9	9.8	
9.5	33.4	12.8		9.5	22 40.7	45.1		8.1	51.6	39.3		9.4	28.4	3.7		8.8	28.0	33.8	K
8.5	39.5	50.9		8.9	23 16.5	8.6		9.3	57 13.3	27.9		9.4	33.7	58.1		9.5	29.5	14.4	
8.9	2 16.9	1.0	B	9.5	21.2	56.9		7.8	13.5	20.0	L	9.5	44.0	13.8		9.5	46.4	57.3	
7.0	38.7	58.2	K	8.3	37.8	13.4		9.0	32.2	38.4		9.1	55.4	37.0	K	7.8	48.4	5.1	L
8.3	3 13.8	20.7		9.5	24 10.9	51.0		9.5	51.7	2.0		9.2	57.4	35.3	K	9.5	55.0	28.2	
9.0	25.9	54.7	B	7.5	38.1	29.5	K	9.3	58 14.1	33.5		8.9	12 1.6	2.3		9.5	55.1	35.4	
9.5	27.9	59.9		8.7	25 56.9	12.1	B	9.5	58.0	29.3		9.5	14.5	22.4		9.5	21 31.9	52.9	
9.5	36.9	56.0		9.5	27 12.3	1.5		9.5	59 0.8	33.5		9.3	28.9	58.5		9.3	43.0	23.8	
9.5	47.5	51.6		9.4	21.6	41.0		9.0	13.6	51.4		9.2	29.5	47.5	B	9.5	48.9	9.4	
9.1	50.4	36.4		7.5	25.7	38.9	K	9.5	26.5	2.9		9.4	37.3	57.2		9.1	49.4	18.3	
9.3	4 3.5	33.2		9.2	28 38.9	56.2	B	8.6	37.5	28.1	K	9.3	44.1	52.4		9.0	53.9	54.9	K
9.0	30.9	5.5		9.5	30 11.2	15.2		9.5	40.2	39.4		9.3	45.2	22.6		8.0	22 6.6	45.9	L
8.8	44.2	36.7		9.4	32.0	9.6		9.0	57.4	40.6		9.4	47.0	25.6		9.1	9.4	39.8	
8.8	47.9	27.6	K	9.4	56.9	55.6	B	9.5	1 23.8	57.4		9.1	48.1	2.4		9.0	32.1	49.6	B
9.0	5 31.7	43.0	B	7.0	31 51.7	23.6	K	9.5	50.6	57.5		9.5	13 1.0	26.6		8.2	36.4	19.3	K
9.0	31.8	27.3	K	9.1	32 51.0	42.2	B	9.5	2 2.5	25.5		9.5	4.0	50.0		9.2	23 0.5	38.3	K
8.8	38.9	43.3	B	9.5	33 54.0	52.7		9.5	22.9	12.4		9.5	30.0	1.7		9.4	57.0	10.9	
9.5	55.7	55.1		9.0	34 3.3	1.6		8.2	3 8.4	38.4		8.7	40.6	0.0		6.9	24 0.6	36.8	K
8.7	6 2.8	5.9	K	7.2	35 39.0	53.3	K	9.5	21.6	30.7		9.0	51.4	33.4		9.4	3.8	56.1	
9.4	37.0	13.0		9.1	39.2	58.1	B	9.5	26.7	42.5		9.5	14 11.7	31.8		9.5	20.9	48.2	
9.4	38.4	1.0		9.2	54.4	11.3	K	8.5	36.5	6.8	K	9.5	27.8	45.3		9.4	25.4	8.7	
9.5	43.0	44.3		9.0	37 42.3	54.5		8.7	46.4	33.5	K	9.5	15 12.9	13.7		8.4	33.9	6.7	L
7.3	46.0	31.3	K	9.2	38 10.4	29.8		9.3	52.0	50.0		9.5	20.1	11.0		8.5	34.9	31.5	K
9.0	58.7	44.7		8.8	39 9.3	13.9	K	9.5	4 6.7	14.0		9.4	23.6	23.0		9.5	53.4	51.3	
9.5	7 8.9	29.8		9.5	23.4	24.6		9.2	13.6	18.4		8.5	34.4	43.2	L	9.5	25 7.5	5.6	
9.4	23.4	57.5		8.8	41.7	44.4	K	8.9	19.4	6.9	K	7.0	34.9	42.5	S	9.2	15.6	32.4	
9.0	8 6.1	34.7	K	9.0	40 43.5	5.8		9.5	41.4	7.9		9.4	37.3	56.8		9.0	16.6	10.6	
9.5	14.4	10.4		9.4	41 12.5	46.1	B	9.5	41.7	58.0		8.9	39.6	25.5		9.5	26.4	53.4	
9.5	15.2	37.8		9.5	43.2	35.7		9.5	44.1	26.6		8.5	46.1	2.2	K	9.5	38.0	58.8	
9.5	49.1	23.8		9.5	42 2.0	8.9		9.4	53.3	59.3		8.0	52.0	18.3		9.5	51.3	11.0	
9.5	49.1	5.7		7.7	43.9	10.9	K	9.5	5 42.2	58.1		7.3	54.1	2.9	K	8.6	55.5	57.9	K
8.9	9 27.8	7.6		8.2	43 33.0	27.3	L	8.6	6 5.0	24.9		9.5	16 19.8	4.7		9.4	26 25.6	10.3	
9.3	10 16.0	50.6		9.4	38.5	59.0		7.8	18.6	15.3	K	9.5	34.0	41.3		9.5	27.0	0.2	
9.0	53.7	10.0	K	9.5	44 23.3	1.0		9.0	24.9	7.9		9.1	39.5	58.1		9.2	32.7	2.9	
5.0	11 1.3	13.1	K	9.4	37.4	37.5		6.7	43.9	9.0	K	6.6	17 12.4	15.4	K	9.2	33.4	10.3	

1101—1160					1161—1220					1221—1280					1281—1340					1341—1400				
	5ᵘ		+34°			5ᵘ		+34°			5ᵘ—6ᵘ		+34°			6ᵘ		+34°			6ᵘ		+34°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	26	34.0	5.7		9.5	35	28.6	4.4		9.5	48	12.7	43.3		9.2	0	44.7	52.3	K	9.5	15	59.0	57.0	
9.5		34.5	57.9		9.0		36.5	1.6	K	9.5		23.3	2.7		9.0		56.6	1.6		9.4	16	6.7	0.2	
8.8		39.8	2.6	B	9.3		39.7	3.5	B	9.3		32.1	5.5		7.8	1	6.9	16.5	L	7.5		52.6	5.1	L
9.0		42.9	36.6		9.3		47.4	13.8		9.5		42.8	17.3		9.5		32.6	44.9		9.4	17	5.2	33.0	
9.2		44.4	53.1		9.5	36	8.6	7.0		9.2	49	16.6	56.8		9.5	2	2.0	46.6	B	9.5		6.9	17.5	
9.0		45.7	2.3		9.5		26.5	53.6	B	9.5		49.9	48.0		9.5		7.7	49.9		9.4		22.9	18.0	
8.8		47.7	2.3	S	9.2		51.7	24.9		8.8		53.7	28.7	K	9.1		20.5	43.3		9.5		25.8	32.1	B
9.5		48.3	0.1		9.4		52.3	10.2		9.5		58.5	14.9		9.0		34.3	36.2		9.5		35.0	12.1	
8.8		48.6	4.8		9.4		59.0	23.5		9.5	50	27.7	44.4	B	9.5		49.0	18.2		9.4		54.8	55.8	
9.1		52.1	2.5	B	9.4	37	17.4	26.9		9.4		41.0	8.7		9.4	3	4.0	33.8		9.5	18	8.4	40.2	
8.8		56.5	4.7		8.2		20.3	29.9	B	6.7		47.5	29.2	K	9.4		11.5	52.3		8.6		18.2	0.1	
9.5		58.7	51.7		7.7		24.5	14.7		9.1	51	2.9	1.6		9.3		25.8	7.1		9.5		20.3	22.9	
9.0	27	6.2	6.0		9.1		37.3	2.7	K	9.4		5.8	53.4		9.3		47.7	0.4		9.5		38.7	55.8	
9.5		14.7	2.5		9.5	38	20.4	48.3		9.4		8.4	14.6		9.5	4	19.7	51.6		9.3		42.4	59.4	
9.5		16.4	13.5		9.2		23.7	34.0		9.5		25.6	5.7		9.5		20.2	56.3		7.5		50.3	34.2	K
9.5		25.3	7.7		8.7		26.4	3.9	K	9.5	52	38.3	53.9		9.2		49.4	53.8		7.0	19	2.7	56.9	K
9.5		31.4	18.5		9.5		40.0	30.8		9.2		41.1	0.8		9.5		56.5	2.7		9.5		25.6	3.5	
8.1		31.7	43.0	L	9.3		59.0	59.0		9.0		42.2	47.2	K	9.5	5	3.1	32.3		9.5		32.0	1.9	
8.8		32.7	26.7		9.3	39	8.0	51.8		9.3		48.3	13.6		9.5		5.3	36.0		9.5		32.6	25.3	
9.5	28	9.5	0.2		9.4		10.1	58.8		9.5		49.0	10.2		9.5		12.2	25.7		9.1		49.9	19.5	R
8.6		31.3	56.9		9.5		19.3	48.2		9.2	53	14.4	31.2		9.5		18.3	13.4		9.5	20	5.8	28.1	
8.7		45.1	37.7	K	8.2		43.3	9.9	L	9.0		19.6	1.6	K	9.2		36.5	23.5		9.2		7.0	38.0	
8.3		49.4	4.8	K	9.2		53.2	23.7		9.5		53.5	38.5		9.3		49.7	9.9		9.5		13.9	47.9	
9.3	29	5.0	18.6		9.5	40	17.5	34.2		9.4		54.7	37.0		8.4	6	0.9	43.3	B	9.4		21.6	50.4	
8.6		12.3	52.9	K	9.5		26.3	34.0		9.3	54	4.6	30.1	B	9.1		17.4	38.5	K	9.3		33.0	20.7	
7.9		12.4	59.1	K	9.0		32.0	32.8	B	9.4		9.0	35.2	B	9.3		25.2	2.2		9.4		33.4	1.2	B
9.5		34.6	45.5		9.5		35.2	33.8		9.1		10.7	44.5	B	9.3	7	18.0	17.1		9.3		39.9	17.2	
9.5		50.7	4.0		8.9		42.4	53.7	K	9.5		11.9	43.5		9.5		28.6	45.3		9.5		50.7	52.5	
8.9		51.4	30.9		8.9	41	0.0	53.5	K	8.2		25.9	22.4	K	9.2		34.9	27.6		9.5	21	1.7	10.3	
8.1	30	14.9	26.2	L	9.0		27.5	0 5	K	8.7		27.1	41.2	K	9.5		49.4	38.2		9.5		11.0	22.4	
9.2		24.0	18.4		9.5		44.2	11.8		9.1		39.4	34.2	K	9.4		49.6	7.3		8.3		13.3	55.5	K
8.0		26.5	12.5	K	9.2		46.0	27.7		9.5		51.8	15.6		9.4		49.8	35.2		9.5		22.8	12.8	
8.8		26.9	45.8		9.4		46.6	33.9		9.5	55	29.7	31.0		9.4	8	10.6	5.2		9.0		36.8	53.1	K
8.3		38.4	10.5	K	9.4		50.4	5.2		9.4		45.0	5.6		9.5		31.1	25.7		9.3		46.5	0.2	B
8.1		47.8	27.8	K	9.0		52.3	2.4	B	8.9	56	16.4	58.5		9.3		44.8	14.6		9.5		49.4	38.3	
9.5		55.0	18.5		9.3		53.5	44.0		9.0		24.2	1.7		9.5		51.6	47.4		9.5		49.6	25.5	
9.5	31	9.4	32.7		9.4		54.6	53.4		9.2		39.0	35.4		9.4	9	11.3	12.9		9.1		55.9	57.4	K
8.9		30.3	26.0	K	9.5		54.6	56.1		9.5		40.1	51.6		8.7		21.9	16.8		9.4	22	27.4	37.5	
9.3		42.0	25.3		9.0	42	6.4	3.0	K	9.5	57	35.5	3.4		7.8		53.5	41.5	K	8.2		27.5	40.7	
8.8		49.3	44.1		9.4		20.0	48.7		8.2		35.8	49.7	K	9.4	10	9.4	41.0		9.5		40.3	35.3	
9.1	32	14.0	5.8		9.5		50.9	3.5		9.5		40.0	44.8		9.5		25.7	50.9		9.3		53.3	57.8	B
8.4		14.8	49.8	K	8.0	43	2.4	13.6	K	9.3	58	15.7	12.7		9.5	11	4.2	28.5		9.5		59.6	58.4	
9.0		21.4	44.4	K	7.7		14.7	24.3	B	9.2		17.9	58.7		9.5		19.8	14.7		9.5	23	7.0	51.1	
9.3		23.3	21.5		9.2		21.4	12.8	K	9.3		18.8	3.4		9.4		58.2	1.9		9.0		7.6	27.9	
9.2		29.0	45.0		9.3		57.3	15.8	K	7.7		20.2	10.6	K	9.5	12	7.6	5.0		9.4		12.9	16.5	
9.5		29.9	9.1		9.5	44	17.9	33.6		8.0		23.0	50.9	K	9.4		7.6	44.8		9.2		31.1	16.3	B
9.5		39.3	7.1		9.4		31.8	28.8		9.3		24.5	59.3		7.2		24.4	39.8	K	9.5		31.5	22.5	
9.4	33	4.0	40.5		8.9		51.8	55.9	K	9.3		42.0	21.8		9.2		49.5	39.3		9.5		32.7	16.5	B
9.1		27.8	33.0		9.1		52.5	31.2	K	9.4		48.1	26.7		8.8	13	2.5	44.0	K	9.5	24	2.2	31.1	
9.0		29.0	16.2		9.5	45	22.1	7.7		9.5	59	6.4	23.2		9.5		38.0	21.8		9.5		22.5	41.4	
9.0		32.4	23.8		9.4		23.0	5.6		9.2		9.7	52.3	K	8.2		56.0	20.1	L	9.5		23.6	47.6	
9.0		32.9	54.0	K	9.5		25.1	49.8		7.7		22.8	54.8	K	9.5	14	4.6	25.3		9.1		52.1	25.2	K
9.5		59.4	22.3		9.1		33.4	58.5		9.5		37.2	0.6		9.3		15.2	1.0		9.3		59.3	12.9	
9.5	34	39.4	25.0		9.0	46	16.3	19.4		9.0		47.5	28.0		9.5		35.8	40.8		9.4	25	3.2	29.9	
9.5		41.5	11.2		9.5		20.9	51.3		8.8		48.4	37.1		9.5		54.7	40.3		9.5		5.5	48.4	
9.1		50.6	19.8		9.5		29.5	36.0		9.2	0	7.9	58.9	K	8.6		59.0	27.7	L	9.5		5.7	52.4	
9.4		54.9	48.0		9.5	47	6.4	10.9		9.4		14.2	3.1		9.5	15	9.0	9.2		9.4		12.8	0.3	
9.5	35	10.3	11.7		9.0		46.4	7.7		9.2		15.0	32.6		8.8		12.7	0.1	K	8.8		49.6	1.0	
9.3		25.3	38.6		9.2	48	3.0	53.9		8.5		18.7	10.3		9.5		23.9	18.7		9.3		53.8	53.1	
9.3		26.7	49.4		9.5		5.8	36.9		9.5		25.3	36.0		9.5		36.7	52.0		9.4		58.8	55.6	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ	+34°			6ᵘ	+34°			6ᵘ—7ᵘ	+34°			7ᵘ	+34°			7ᵘ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	26 8.7	50.2	K	8.8	38 51.0	47.7		9.1	55 39.1	5.3		9.5	11 39.3	58.5		9.5	27 12.5	1.1	
8.0	24.9	18.1	K	7.9	55.8	15.6	L	9.4	45.6	55.5		9.1	51.1	42.7	K	9.3	22.9	37.2	
9.5	55.5	0.3	B	9.4	58.3	35.6		9.2	56 7.9	57.0		8.0	53.1	17.2	K	9.5	29.2	41.7	B
9.5	27 3.5	47.6		9.5	39 18.4	39.0		6.0	37.9	41.8	K	9.0	12 10.2	1.4		9.5	28 29.8	7.9	
9.3	23.8	53.0		9.1	29.8	33.6		9.5	57 16.5	20.7		8.7	21.8	57.7	L	8.5	45.1	2.0	B
9.2	42.4	37.9	R	9.5	33.1	27.9		9.5	17.6	53.4	B	9.5	48.7	1.3		7.9	29 5.8	1.9	B
9.5	44.7	10.0		9.4	47.5	17.4	B	8.9	19.0	18.8		9.0	54.4	20.2		9.4	16.0	35.4	
8.6	28 2.8	53.6	L	9.5	59.9	57.4		9.4	34.3	18.7		9.4	13 14.7	55.8		8.5	25.5	22.9	
9.5	17.5	35.6		9.2	40 23.6	4.7		9.3	48.6	31.0		9.2	15.8	29.4		5.0	41.9	55.3	K
9.3	26.6	54.4		8.9	33.0	23.0		6.0	51.2	13.0	L	9.3	24.3	14.8		9.5	30 31.8	33.3	
9.5	31.2	54.8		9.4	41 12.9	18.5		9.5	52.4	17.0	B	9.3	24.7	59.3	B	9.4	33.2	4.4	
8.8	35.9	57.3	K	9.1	48.3	14.8		9.4	58 8.4	50.9	B	9.2	26.2	42.1	K	9.4	31 36.9	9.8	
9.5	48.8	32.4		9.5	57.0	21.2		6.6	43.2	2.3	K	9.4	42.7	54.8	B	9.2	51.2	30.6	
9.5	52.3	32.5	B	9.5	42 20.5	45.7		8.0	44.0	42.6	L	9.1	52.5	52.1	K	9.1	32 30.8	10.8	B
9.0	29 1.6	9.6	K	8.9	34.0	1.5	L	9.3	59 7.6	53.0		9.5	57.3	34.0		9.2	31.5	24.5	
8.2	15.1	24.9	R	9.1	35.7	49.4		7.0	20.6	9.8	K	9.4	14 3.2	48.7		9.5	33 0.0	4.7	
8.9	18.6	4.6	K	9.0	38.9	19.3		9.3	36.2	26.9		9.5	11.3	49.5		6.5	19.7	20.5	K
8.9	56.4	33.0	K	9.5	56.6	16.3		9.4	53.0	32.5		8.3	11.8	30.7	B	9.3	41.5	18.2	
9.3	59.5	43.5		9.3	43 3.6	47.4		9.0	59.5	18.5	K	9.3	19.5	8.6	B	9.3	53.0	56.2	
9.0	59.8	53.8	R	9.2	9.9	38.3		9.5	59.8	47.9	B	9.5	52.9	47.7		9.3	57.0	32.7	
9.0	30 17.0	11.1	R	3.2	13.7	7.9	K	9.2	0 21.1	28.0	K	8.0	56.4	29.9	L	9.5	59.0	41.8	
9.5	24.5	26.0		9.5	26.5	1.2		9.5	27.9	11.2		9.2	15 23.9	18.3		9.0	34 35.6	22.8	
9.5	31 4.0	20.3		9.4	30.3	33.3		9.4	33.7	38.6	B	8.8	30.2	54.3		9.5	51.5	6.1	
9.5	24.8	26.7		9.2	44.5	42.4	K	9.4	46.5	9.5		9.5	39.1	2.4		9.4	55.2	27.4	B
8.9	26.0	21.5	R	9.5	54.1	24.4		9.4	55.5	42.5		9.1	48.8	15.4		9.4	35 14.9	33.2	B
9.2	28.8	14.2	B	9.5	44 15.0	21.0		9.5	1 4.1	10.4		9.4	16 20.7	3.2		9.4	59.3	4.8	B
8.7	54.9	59.3	R	9.5	18.7	52.1		9.5	29.6	47.2		8.5	47.2	27.9	K	8.7	36 5.4	10.5	K
8.5	32 3.7	9.8	R	9.1	33.5	0.7		9.5	35.7	26.2		9.4	17 19.6	21.3		8.4	8.1	25.6	
9.3	10.9	20.5		9.5	45 20.0	38.3		8.5	42.3	0.2	R	9.4	38.2	43.3		7.9	14.9	54.0	K
9.3	11.8	15.5		9.5	31.8	51.1		8.9	57.8	26.2		9.2	39.4	29.9		9.2	25.8	24.2	
9.5	26.5	54.0		9.5	36.0	44.7		9.4	2 8.0	38.8	B	9.5	18 19.7	48.5		9.2	29.0	14.3	
9.5	27.8	30.3		9.5	38.8	41.4		9.5	8.7	17.0		8.9	52.3	13.7	K	9.5	35.5	55.7	
9.5	36.5	15.7		9.3	46 26.4	56.7		9.4	36.9	17.3	B	9.5	19 3.1	13.0		9.4	37 6.8	55.0	
7.8	58.8	13.6	K	8.6	36.5	35.0		9.4	40.0	48.2		7.5	14.5	44.1	K	9.5	48.4	13.9	
7.9	33 24.8	15.3	K	8.2	38.1	38.3	S	8.7	50.6	22.5	K	9.1	27.6	31.6		9.5	50.0	24.1	
9.2	25.0	45.7		9.0	47 11.1	50.7	K	8.3	3 13.1	29.1	K	9.5	29.1	53.4		8.3	38 0.7	29.5	
9.0	27.0	11.3	K	9.5	37.8	4.8		9.4	22.6	54.0	B	9.2	40.4	27.5		9.3	30.5	26.8	
9.1	38.6	45.1		9.5	48 11.2	57.9		9.5	4 22.1	57.6		9.3	41.1	45.6		8.5	57.5	3.5	K
8.8	59.1	26.6	K	9.4	13.9	42.8		9.4	35.1	29.9	B	9.4	42.5	36.3		9.3	39 9.0	43.8	
9.5	34 10.6	56.2		9.0	22.5	23.6	K	9.5	5 0.8	54.0		9.5	20 13.7	28.5		9.5	12.4	43.1	B
9.1	27.9	13.1		8.9	35.7	30.3	K	9.5	47.4	36.5		9.5	31.4	3.6		9.3	13.6	32.8	
8.3	34.9	18.3	L	9.4	37.5	20.7		9.5	6 2.0	27.9		9.5	21 12.6	3.0		9.5	31.9	54.7	
9.5	36.1	49.7		9.5	49 35.7	7.8		9.5	38.9	55.8		9.1	16.0	0.1	K	9.0	50.7	12.7	B
9.2	35 17.8	15.4		9.3	59.2	42.1		9.3	46.3	19.1		9.4	22 1.5	11.6		9.4	40 26.7	2.0	B
9.5	50.7	51.3		9.5	50 38.1	12.0		9.3	7 3.8	10.5		9.4	39.9	9.4		9.3	34.6	43.7	
9.5	36 2.8	53.8		9.5	47.1	32.4		9.5	27.2	39.0		9.5	23 16.1	6.1		9.3	41 4.9	19.4	B
9.5	7.6	1.1		9.5	56.9	56.0		8.7	33.1	16.2	K	9.1	27.2	9.3		8.4	6.0	38.8	K
9.5	18.6	46.4		9.4	59.1	35.9	B	8.7	34.8	21.2	K	9.0	34.3	17.8	K	8.6	24.7	30.3	B
9.5	22.0	7.9		9.5	51 26.2	15.0		9.4	56.7	51.8	B	7.5	43.3	14.5	K	9.2	27.1	26.3	
9.5	37.4	36.5		9.5	30.7	0.4	B	9.5	8 24.2	58.9		9.5	24 19.1	14.2		9.3	29.8	11.2	
8.9	37.6	26.2		9.3	52 1.7	32.4		9.5	24.5	27.2	B	9.3	41.0	16.7		9.2	33.3	5.4	B
9.5	37 27.9	59.8		9.3	18.9	34.4		9.3	32.7	49.2		8.8	46.2	6.6		8.7	42 9.2	8.9	K
9.5	32.8	17.5		9.4	30.6	29.5		9.2	53.0	59.8		9.2	57.3	38.0		9.5	16.8	20.1	B
9.5	33.6	24.7		9.5	53 59.1	47.1	B	8.8	56.3	49.3	K	9.2	25 0.8	30.1		9.4	29.5	32.6	
9.5	38 2.2	28.6		8.8	59.4	26.0		9.2	9 35.2	6.4		9.3	9.7	3.0		8.0	42.8	12.6	K
9.2	13.8	55.5		7.5	54 10.9	5.5	L	7.2	45.6	49.0	K	9.2	21.5	45.3		9.3	43 7.4	18.5	
9.2	28.5	41.7		8.9	22.1	52.9	K	9.4	10 6.6	27.2		9.1	26 22.5	43.0		9.0	7.9	5.7	
9.1	41.6	5.2		9.3	55 4.5	13.3		9.5	7.5	43.3		9.5	30.0	7.2		9.4	26.2	59.2	
9.3	42.8	11.2	B	9.5	20.4	42.2	B	9.1	11 14.0	45.8		8.7	32.8	38.0		8.6	28.2	49.1	K
9.5	49.9	17.8		8.6	26.2	30.3	L	9.5	32.1	12.0		9.5	27 0.0	48.3		8.5	44.3	29.8	K

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ᵘ—8ᵘ	+34°			8ᵘ	+34°			8ᵘ	+34°			8ᵘ	+34°			8ᵘ—9ᵘ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	44 15.4	25.7		8.9	0 57.5	41.2		9.0	15 36.3	13.2		9.4	32 31.4	20.7		9.5	56 41.5	14.1	
9.0	48.4	43.9		9.3	2 6.2	1.0		9.0	16 4.8	23.3		8.5	34.2	43.3	K	9.1	57 12.3	12.2	
8.3	45 0.9	39.6		9.5	8.3	17.1		9.5	28.3	9.4		8.5	38.3	57.3		9.0	34.2	11.5	
9.5	4.6	46.9		9.5	15.5	51.1		8.3	59.2	40.7	L	9.5	33 3.0	15.8		9.1	58 2.5	40.0	
7.9	26.6	59.2	K	8.9	16.2	1.4	K	9.2	17 4.9	32.8		7.3	22.7	43.2	K	8.8	3.4	43.2	
9.0	29.2	1.0	K	9.5	27.3	7.0		9.4	8.0	3.0		9.0	52.6	7.4		9.4	59 8.9	1.1	
9.3	53.3	6.5		9.5	39.7	14.2		9.3	31.2	23.3		9.1	34 12.6	18.9		9.5	29.2	29.7	
9.4	46 9.6	34.7		9.2	42.4	57.6		7.8	34.2	48.0	K	9.3	23.1	13.0		9.1	55.3	45.3	
8.9	30.1	56.8	K	9.4	50.1	2.9	B	9.5	53.0	0.6		9.2	50.9	40.8		6.5	56.2	29.0	K
8.2	32.2	49.2	K	9.5	53.9	51.6		9.5	18 17.9	51.1	B	9.4	35 48.4	24.7		9.5	0 48.0	11.3	
9.5	38.7	57.9		9.5	3 14.0	35.1		9.5	30.9	54.6		9.5	36 2.5	19.9		9.2	58.8	44.0	B
7.3	40.1	45.3	K	8.4	17.8	54.1	K	9.5	52.2	28.0		8.9	18.9	10.2		9.4	2 0.7	54.6	
9.3	59.6	56.9		9.5	34.0	1.9		8.4	55.0	12.0	K	9.4	31.7	55.4		9.2	53.0	31.5	
8.5	47 31.7	39.4	L	8.9	58.9	25.4		7.5	59.1	0.0	K	7.0	37 1.0	7.0	K	9.5	3 35.6	14.1	
9.4	57.0	31.4	B	9.5	4 13.3	14.7		6.9	19 10.0	10.6	K	9.4	38 33.5	17.4		8.1	42.6	11.4	B
9.3	48 8.1	26.6	B	9.2	24.3	32.5	B	9.3	33.2	53.3		9.4	42.9	54.8		9.5	53.8	48.5	
8.0	11.7	26.4	B	9.0	30.7	13.2		9.3	33.9	46.3		9.0	40 41.2	46.0		9.4	59.2	6.2	
9.4	38.6	49.0		8.9	35.3	8.3		8.0	46.0	12.8	K	7.3	48.2	14.5	K	9.1	4 15.4	29.9	
9.3	39.4	42.8		8.9	54.7	36.5		9.3	49.0	47.8	B	9.5	54.7	51.7		9.5	33.9	4.4	
8.8	46.5	20.7	B	9.5	59.6	57.4	B	9.4	20 8.3	55.6		9.4	41 10.0	48.9	B	9.3	5 3.1	35.8	K
9.5	49 8.6	15.3		7.3	5 12.8	23.5	L	8.0	11.1	44.6	K	9.5	20.2	9.3		9.5	16.8	8.8	
9.5	16.2	35.4		9.2	13.3	37.2		8.5	16.2	36.4	K	9.2	28.7	45.6		8.1	20.9	25.4	L
8.7	30.8	16.2	L	9.1	21.7	45.8		9.5	49.5	50.1		9.0	43.5	50.0		8.3	27.1	4.8	L
7.5	52.1	16.7	K	9.4	35.9	8.8		9.5	21 11.1	52.5		8.9	42 14.4	39.5	K	9.0	30.4	24.6	
9.0	50 33.3	36.6		9.5	6 17.2	8.3		9.5	19.0	48.8		9.3	21.2	40.9		8.9	43.5	10.8	
9.3	51 14.4	17.4		9.5	31.3	43.6		8.8	41.3	30.9		9.3	23.3	57.3		9.1	6 47.7	48.7	B
9.1	52 37.7	29.4		9.5	36.2	12.8		9.5	42.4	49.7		8.8	34.0	43.6	K	9.5	7 3.7	42.8	
9.4	47.6	16.4		9.0	38.4	16.3	K	9.4	52.8	53.8		9.4	37.2	28.3	B	8.9	13.0	31.1	
9.3	53 57.2	18.8		9.4	50.0	8.7		9.1	22 4.0	7.3	B	9.5	43 9.0	13.5		7.4	8 28.0	7.1	K
9.4	54 28.5	22.7	B	9.5	58.1	46.9		9.3	5.0	10.8		8.6	14.2	38.4	K	9.5	10 23.8	35.3	
9.2	59.8	26.7		8.7	7 0.9	49.6	K	9.4	19.9	3.5		9.4	28.9	33.5		9.5	36.1	34.2	
9.2	55 0.0	12.9		9.5	30.7	9.9		9.5	23 11.8	56.0		9.5	47.8	55.3		9.3	11 4.5	38.7	
9.0	0.3	39.4		9.5	47.5	13.7		8.8	30.2	32.3		9.4	44 45.5	55.4		9.5	9.8	50.0	
9.5	6.6	54.5		9.5	54.9	49.2		9.5	42.4	4.8		9.5	45 48.8	2.1		9.5	26.0	43.7	
8.4	9.0	3.7	K	9.4	8 7.9	32.8		7.5	43.7	53.0	K	9.1	46 4.2	22.5		9.3	31.2	44.8	
9.2	58.3	45.5		9.3	9.5	43.8		9.4	55.2	43.7		9.5	25.9	36.8		9.5	33.6	28.0	
9.5	56 0.5	4.5		9.5	40.7	25.6		9.4	24 5.5	14.0		9.5	29.2	50.2		8.4	43.5	22.9	K
9.5	3.8	42.7		9.3	56.4	42.0		9.3	26.8	16.9		9.1	47 36.5	50.2		8.4	51.2	47.6	K
9.3	16.7	8.6		8.5	9 9.5	55.5	K	9.2	25 48.8	22.8		9.5	56.0	33.5		9.2	12 15.4	50.1	B
9.4	22.4	29.1		9.5	44.9	23.3		9.4	26 17.2	48.8		9.1	48 20.9	6.0		9.3	13 50.9	25.5	
8.7	28.5	58.9	L	9.4	57.3	26.0		9.5	33.2	0.7	B	9.3	33.0	24.8		9.4	59.0	12.4	
9.5	57 2.3	32.6		9.0	10 45.5	54.4		9.5	58.5	8.2		9.2	42.8	51.8		9.1	14 9.9	34.5	
9.3	5.0	32.2		9.1	11 29.7	53.0		9.5	27 7.4	22.0		8.0	49 3.3	27.9	L	9.2	16.3	16.4	B
9.5	10.2	2.4		9.4	12 4.1	52.6		9.5	23.9	26.4		9.5	40.9	24.3		8.1	18.2	31.5	B
8.3	25.4	18.6		8.8	5.2	36.0		9.0	51.8	1.7		9.5	49.1	10.1		7.7	34.1	5.8	K
9.5	28.5	5.7		8.5	6.0	19.6	K	9.5	28 2.7	50.2		9.5	51.0	25.1	B	9.5	15 18.8	58.8	B
9.5	58.5	21.4		8.3	6.3	46.9	L	9.4	5.3	58.7		8.5	50 6.2	12.6	L	9.5	22.8	3.3	
9.2	58 3.0	44.1		7.3	23.2	23.3	K	9.4	33.1	9.7		9.3	19.2	59.8	B	7.9	29.4	58.2	K
9.5	16.4	56.4		8.8	52.8	30.3	K	9.3	44.9	39.6		8.9	49.2	19.4		9.5	16 38.6	51.0	
9.3	44.9	15.5		9.5	13 14.5	17.9		9.5	50.7	50.9	B	9.0	51 12.3	29.2		9.5	48.9	45.2	
9.3	53.8	37.7		9.0	52.2	20.0	K	9.4	51.0	41.5		9.5	44.5	36.7		9.1	17 35.3	7.2	
9.5	54.7	45.8		9.5	55.5	49.0		9.5	29 12.9	42.4		9.1	46.1	23.6		8.8	36.5	31.7	K
7.2	59 0.5	27.9	K	8.8	14 10.6	12.1	B	9.0	23.0	11.4		9.4	54 21.2	48.8		9.3	59.7	25.5	
8.8	16.6	44.3		8.9	10.8	18.5	B	8.2	25.4	59.2		9.0	25.5	56.7		9.5	18 18.4	52.6	
9.5	28.2	26.1		9.5	16.0	10.8		9.5	56.9	48.3		9.5	26.6	23.3		9.5	19 2.9	51.7	
9.5	34.2	1.3		9.3	23.3	48.8		9.1	30 15.3	38.2	B	9.5	49.5	59.6		9.3	20 19.5	37.6	
8.8	56.2	44.3	K	9.0	32.9	1.4		8.3	31 41.6	23.5		9.5	49.7	18.3		9.0	36.1	7.3	
9.5	0 15.3	53.9		9.5	52.0	29.4		8.6	54.3	40.6		8.8	55 20.7	53.9		7.7	21 9.6	12.2	K
9.4	49.5	16.0		9.3	15 14.9	36.9	B	9.5	32 27.4	47.8		8.5	45.0	58.8	K	6.7	57.5	17.4	K
9.3	55.3	11.9	B	9.5	31.2	3.5		9.3	30.0	34.6		9.5	51.8	1.3		7.8	22 4.2	50.5	K

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	9ʰ	+34°			9ʰ—10ʰ	+34°			10ʰ	+34°			10ʰ—11ʰ	+34°			11ʰ—12ʰ	+34°	
m				m				m				m				m			
9.5	22 16.3	55.1		9.4	50 9.4	31.3	B	9.5	15 3.0	16.8		5.5	47 42.5	17.1	K	9.5	30 32.0	12.0	
9.5	27.5	2.8		9.0	23.3	5.1	K	7.3	44.5	55.7	K	9.5	48 16.5	32.2		6.3	52.5	26.8	L
9.5	47.0	36.5		9.1	26.1	40.6		5.8	48.9	26.8	K	8.8	17.8	9.2	K	9.3	31 13.5	22.1	
9.5	56.8	43.3		9.1	51 19.3	26.5		7.4	16 0.3	54.6	B	9.5	27.3	24.4		9.3	17.0	35.5	
9.2	24 25.2	34.2	K	9.2	53.2	39.6		9.2	24.4	45.9	K	9.4	28.9	57.8		8.6	32 57.5	28.9	
9.5	25 38.8	57.0		9.3	58.6	8.5		8.5	17 16.0	2.8	K	9.4	37.5	5.6		9.5	33 18.3	2.0	B
9.0	26 12.6	19.0		9.5	53 5.3	25.1		9.5	30.3	54.2		9.5	49 59.6	32.3		9.4	27.0	12.7	
9.4	54.3	6.7		9.4	14.6	32.1		4.5	36.2	32.4	L	8.2	50 53.1	5.9	K	9.5	34 17.7	1.9	
9.5	27 18.1	3.5		9.5	55.2	23.0		9.1	58.6	2.7	K	9.2	51 50.5	23.6	B	9.4	25.0	3.4	
8.5	29.9	39.9	K	9.5	54 10.0	0.6		9.5	18 8.4	51.5		9.5	52 16.4	1.5		9.5	57.5	28.8	
9.4	28 15.4	42.4		9.4	38.8	56.1		9.3	34.7	37.1		9.4	24.7	21.7		9.5	35 42.2	23.0	
9.5	29 5.9	30.0		9.4	48.7	43.0	B	9.3	42.5	34.3		9.5	40.9	53.3		9.1	36 20.7	56.0	
8.9	27.6	15.3	K	8.5	55 4.3	43.2	K	9.5	21 5.4	34.8		9.3	53 31.0	8.1		9.4	27.4	28.4	B
8.8	34.9	33.5	K	9.4	7.2	52.8		9.4	22 28.3	56.0		9.5	54 37.5	41.5		9.4	37.0	0.4	
9.4	31 29.5	6.3		9.4	44.2	12.5		9.0	35.3	53.0	K	9.1	56 2.6	58.5	K	9.4	37 26.3	22.8	B
9.2	44.0	39.1		9.4	56.2	39.5		9.3	48.5	48.8		9.5	23.5	15.8		9.5	33.5	54.4	
9.2	33 22.0	55.3	B	9.4	56 42.8	52.6		9.5	23 51.2	27.1		9.4	57 25.2	35.4		9.5	39 2.0	8.5	
9.5	28.2	23.8		9.5	57 18.6	17.0		9.3	24 30.3	41.8		9.5	0 8.8	0.9		9.4	18.2	14.1	
8.1	36.5	58.1	K	8.1	21.5	53.6	K	9.3	34.8	48.1	K	9.5	28.3	59.0		9.1	41 21.2	28.9	
9.5	34 36.7	26.0		8.3	21.8	57.1	K	9.5	25 35.7	54.7		8.4	43.7	39.3	B	9.4	42 58.1	30.2	B
9.5	46.0	43.2		9.5	44.3	52.1		8.9	26 17.6	12.3	K	9.4	2 55.9	36.4		9.4	43 14.0	7.0	
7.2	35 1.9	45.9	K	9.0	58 1.5	14.6		9.3	40.1	56.4		9.5	3 2.2	12.8		7.1	25.1	25.1	L
8.3	14.1	3.4	B	8.6	32.3	17.6		9.5	28 0.5	52.6		9.5	4.9	50.3		9.0	33.1	10.9	B
9.4	19.2	23.0		9.0	32.6	42.8		9.4	29 5.6	55.8		9.0	4 2.8	21.1		6.2	36.8	10.8	B
9.1	43.7	4.1		9.3	38.6	27.5		6.5	40.1	50.2	L	9.5	12.7	1.5		8.6	44 38.1	38.9	K
9.4	36 5.1	16.7	B	9.1	59 36.2	12.9	K	9.3	31 7.2	36.4		6.8	5 27.5	14.1	K	9.4	45 15.1	31.0	B
9.4	11.0	17.9		9.4	46.6	12.0		9.5	45.0	28.5		9.5	6 25.9	17.1		9.4	46 0.2	30.9	B
9.5	49.5	43.2		7.0	0 0.4	13.3	K	9.5	32 2.3	5.2	B	9.5	59.5	25.0		6.8	15.5	26.1	K
8.5	38 15.9	26.4	K	7.3	14.6	56.9	K	9.4	39.8	7.0		9.0	9 41.8	4.0		9.5	47 3.5	48 8	
9.5	17.1	32.8		8.9	34.4	7.5		9.4	44.0	24.0		9.5	10 52.8	33.7		8.2	48 42.2	0.3	K
9.5	38.2	13.0		8.4	46.5	3.9		9.5	33 22.2	56.0		9.1	54.3	27.7		9.5	52.5	40.7	B
9.5	39 41.3	12.3		8.2	1 55.3	49.6	K	9.5	34 8.4	51.6		9.3	11 33.5	50.7		9.3	49 37.0	57.5	
9.5	51.3	31.1		9.5	2 38.5	40.6		8.5	35 2.8	7.2	K	9.5	12 33.4	5.0		8.9	40.1	9.7	K
9.5	57.8	23.4		9.5	51.9	13.3		9.2	27.5	48.7	K	9.3	56.3	25.3	B	9.3	50 8.5	36.1	
6.3	40 23.9	46.7	K	9.5	55.2	27.3		9.4	32.4	10.4	B	9.5	13 20.5	16.8		9.4	27.5	12.1	
9.4	55.3	43.9		9.1	3 21.6	14.1		8.3	38 16.7	53.5	K	9.5	14 48.0	39.7		9.4	51 6.5	2.1	
9.1	41 0.3	47.0	K	8.5	4 15.7	35.5		9.5	32.9	55.5	B	8.3	15 0.8	1.1	K	9.5	49.2	4.2	
7.8	23.8	17.0	K	9.4	48.3	49.0		8.2	40.4	19.3	B	9.3	16 30.1	2.3		9.0	52 20.0	45.1	K
9.5	42 3.6	11.3		9.5	5 3.4	12.9		9.2	39 34.5	55.1		9.3	44.9	13.8		6.6	30.6	51.0	K
9.0	43 20.6	27.0		9.5	29.9	52.2		8.7	35.7	21.6	K	9.4	17 1.7	53.3		9.1	53 0.5	38.5	
8.4	31.9	45.9	K	9.5	6 6.6	33.5		9.3	40 0.0	2.9		9.5	18 33.4	44.5	B	8.8	55 51.2	24.4	
9.5	32.5	55.7		8.6	27.7	27.0		9.3	1.5	22.2		6.8	38.3	14.8	K	9.4	56 58.0	25.1	
9.5	40.0	59.3		9.4	41.1	55.1		9.1	32.8	31.2		9.5	19 24.4	50.6		9.5	57 9.5	51.6	
8.8	51.7	28.0	L	9.4	7 5.9	58.7		9.5	41 17.2	7.1	B	9.0	35.1	44.0		7.3	43.0	33.4	K
9.5	44 9.3	28.5	B	8.5	44.7	30.8		9.5	31.9	39.6		9.3	48.3	47.5		8.0	59 15.7	22.0	L
9.5	19.3	45.3		9.5	8 27.0	23.6		8.7	55.9	46.5	K	9.5	20 6.2	18.5		8.1	29.1	14.1	K
8.8	31.8	3.8	K	9.5	9 23.8	3.7		9.3	42 23.6	33.3	B	9.1	8.5	12.0		9.4	59.5	38.1	
8.2	44.9	37.1	L	9.4	10 9.7	51.1		9.5	26.2	45.7		9.4	24 37.5	11.2	B	8.7	0 3.2	31.2	K
9.5	46 18.4	56.2	B	9.5	11 3.2	27.4		9.0	43 41.0	56.2	K	9.3	46.4	21.7		9.5	43.0	50.7	
9.5	23.4	10.4	B	8.1	41.5	18.9	K	9.5	44 28.8	49.0		7.7	25 18.9	50.5	K	9.5	1 6.6	6.7	
9.5	55.3	39.4		8.5	44.4	12.7	K	9.5	45 1.0	25.7		9.1	26 59.3	37.7	B	9.1	2 12.5	44.4	K
9.2	47 15.3	19.7	K	9.5	12 47.9	33.8		4.0	11.1	59.7	B	9.5	27 6.9	1.5		9.4	19.2	17.7	B
9.1	33.9	56.9		9.5	55.8	47.5		9.5	24.7	23.8		8.7	15.5	36.4	K	9.5	51.5	53.3	
8.7	44.3	8.6	B	7.8	59.3	12.2	K	9.5	33.5	37.5		9.3	28.7	38.2		9.2	3 0.8	15.5	B
9.3	50.8	48.0		9.5	13 15.7	16.3		9.3	46.2	27.6		9.2	28 21.7	2.5	K	9.5	4 12.3	13.6	B
9.4	52.1	7.2		8.9	26.4	34.3	K	8.5	46 7.5	53.9	K	8.7	29 2.6	13.4	K	9.4	5 16.5	36.8	
9.5	48 35.9	23.4		9.5	55.6	33.8		9.1	29.2	40.9		9.5	8.0	19.6		9.5	6 36.5	30.6	
9.5	49 1.3	14.8		8.3	14 30.9	0.4	K	7.0	53.4	48.5	K	9.2	36.1	53.9		9.0	53.0	17.8	B
9.4	55.3	49.3		9.5	40.2	53.8	B	9.5	47 8.8	40.2		8.9	47.5	42.0		8.0	55.3	15.3	B
9.4	50 6.6	2.1		6.0	44.4	38.3	L	9.1	18.5	49.3	K	9.4	30 4.4	5.2	B	9.4	7 0.7	20.4	B

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	12ᵐ	+34°			12ᵐ—13ᵐ	+34°			13ᵐ	+34°			13ᵐ—14ᵐ	+34°			14ᵐ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.8	7 39.6	3.1	K	9.5	42 42.2	52.9		7.9	18 21.4	6.6	K	9.5	55 31.6	28.5		9.0	29 1.5	22.8	
9.3	52.0	35.0		9.4	43 19.7	29.9		9.1	36.8	40.9	K	9.5	56 13.7	28.5		9.2	18.6	26.8	B
9.5	9 32.0	42.1		9.3	44 7.7	9.4		9.4	19 31.8	26.1	B	9.5	25.6	51.8		9.0	31 0.5	21.4	K
9.5	10 12.2	45.4		9.5	34.6	59.0		9.0	21 5.7	22.8	B	9.4	57 15.8	36.4	B	7.5	1.9	18.6	K
9.3	13 1.7	15.9		8.7	45 33.7	37.2	K	9.5	23.6	5.3		9.5	58 7.7	6.1		9.5	32 5.9	23.2	
9.4	6.2	31.7		9.0	53.2	31.3	K	8.0	57.0	25.4	L	9.5	59 19.9	52.5		8.9	43.8	39.1	K
9.1	47.0	48.3	B	8.9	46 32.2	42.6	K	9.5	22 39.5	55.4		9.4	21.5	30.7		9.4	34 8.8	27.8	
9.0	14 16.1	15.5		9.3	40.0	0.2		8.5	23 26.0	2.0	K	9.1	28.5	34.7	B	9.5	18.5	8.1	
9.4	15 45.0	6.5		6.5	47 18.4	19.5	K	9.5	26 35.5	54.3		9.5	29.2	21.5		9.3	31.6	31.8	B
9.5	17 12.4	44.6		9.5	59.5	58.5		6.5	50.0	23.5	K	9.1	1 13.9	43.6		8.9	38.4	32.3	K
8.8	42.7	19.9	K	9.0	50 54.7	26.9		9.0	51.5	47.8	K	9.0	22.0	5.8		8.5	42.9	54.2	K
9.5	18 39.0	55.5		9.2	51 4.5	14.7	K	9.5	27 24.1	10.8	B	9.0	2 6.2	36.4	K	8.7	36 25.2	44.3	K
9.5	19 3.4	55.9		9.5	25.1	3.9		9.4	28 16.8	28.0	B	9.1	17.5	20.2		9.1	37 11.9	32.6	
9.4	31.6	24.3		9.4	51.4	1.2		9.5	45.7	49.5		8.5	25.9	22.6	K	9.5	42.4	5.6	
9.5	32.1	1.1	B	9.5	52.2	43.3	B	6.5	31 7.0	29.2	K	8.5	29.6	29.8	K	9.4	38 28.8	18.1	
9.5	21 27.6	31.8		9.5	53.1	46.6		8.3	31.4	30.2	K	9.5	53.9	59.0		9.2	30.5	21.4	B
9.0	22 25.9	21.9		8.3	52 36.3	49.9	K	9.5	38.9	52.9		9.3	3 2.2	28.8		9.0	36.0	26.5	
9.1	23 17.7	54.0		9.5	53 38.0	7.4		9.5	32 22.2	39.1		9.5	12.0	54.6		9.5	39 2.7	39.6	
8.4	27.9	33.2	K	9.4	55 28.2	33.4		8.7	34 29.7	8.6	K	9.5	53.0	26.1		7.7	14.0	59.3	K
9.0	55.1	42.1	K	9.5	50.0	56.0		9.4	35 15.0	35.7		9.3	4 52.2	37.8		9.5	35.9	2.7	
9.4	24 28.1	57.2	B	9.5	56 11.5	56.8		9.6	41.9	13.0		9.5	5 19.3	53.2		9.5	36.6	48.7	
8.8	31.4	44.1	K	9.4	57 58.7	48.1	B	9.6	42.3	37.8		9.3	33.2	19.9		9.2	40 5.2	29.6	K
8.7	34.5	16.0		9.5	58 41.2	3.5		9.2	45.5	45.7	K	9.5	48.9	34.0		9.5	11.0	50.2	
9.5	53.4	54.2		9.5	56.2	50.2		8.2	36 14.2	35.3	K	9.5	6 22.4	48.8		9.4	22.7	34.5	
9.3	25 6.9	35.2		9.5	56.5	57.4		9.5	37 0.7	40.9		9.5	50.9	22.2		9.0	38.2	27.3	K
9.5	23.9	22.8		9.1	59 13.7	39.2		9.5	56.9	14.7		9.4	7 7.2	30.2	B	9.2	45.7	50.7	
9.5	33.4	32.9		9.5	33.5	33.2		9.0	38 12.8	3.1	K	8.5	8 3.9	38.0	S	9.5	41 38.5	29.7	
9.5	46.2	7.4		9.4	42.7	16.8		7.5	39 38.8	47.0	K	9.5	11.5	52.5		9.3	42 12.1	13.9	
9.1	26 7.9	18.1		8.1	47.6	48.5	K	8.6	40 46.5	2.0	K	9.3	9 58.9	15.0		9.3	29.0	36.7	B
9.2	8.3	49.2		9.3	55.4	32.0	B	9.5	50.2	27.7		9.1	10 6.6	12.2		9.4	51.7	59.9	
8.3	15.9	57.9	K	9.5	0 51.0	4.9		8.5	50.8	43.2	K	9.5	32.1	31.5		9.4	44 21.5	36.2	
5.4	30.6	2.8	L	9.3	1 0.6	36.1	B	9.5	41 16.9	47.0		9.5	35.9	38.1		9.3	47.4	48.5	K
6.6	40.7	11.5	L	9.5	2 4.2	9.1		9.5	42 3.4	56.1		8.5	11 5.8	33.5	K	9.0	45 41.5	58.5	
9.5	27 7.0	9.6		9.5	8.3	16.1		8.4	53.0	28.1	K	9.0	13.5	25.7		9.1	48.8	44.8	B
9.5	28 2.6	6.0		9.4	33.8	24.7	B	9.5	43 24.0	39.6		8.7	12 14.4	52.8	K	9.4	56.2	13.5	
8.7	33.0	51.2	K	9.4	56.9	42.7	B	9.2	28.5	6.1		9.2	47.3	5.1	K	9.5	46 49.7	9.4	
8.5	29 12.7	43.9	K	9.3	3 6.7	11.9		9.5	44 23.8	32.0		9.1	13 9.5	29.5		9.5	47 7.7	33.9	
9.5	42.9	26.5		9.0	8.2	29.6	L	9.5	54.5	6.1		9.5	34.1	56.2	B	9.0	19.8	38.0	
9.4	30 26.6	5.0		9.5	25.5	29.2	B	9.5	58.6	55.5		9.5	14 5.0	35.4		8.5	48 6.2	13.8	
9.3	31 18.2	22.6	K	7.7	4 27.9	14.2	K	8.9	45 13.0	10.8	L	8.6	17.5	14.4	K	8.6	17.4	12.1	
7.0	33 6.7	57.2	K	9.5	41.7	21.0		9.5	40.5	42.1		9.3	15 29.9	32.4		7.9	34.0	41.4	K
8.1	50.6	54.7	K	9.3	5 15.3	32.7		9.4	50.2	26.6		9.0	42.0	13.7	K	9.5	49 20.7	32.8	
9.5	34 21.3	9.8	B	9.5	7 6.8	16.9		9.5	46 0.5	22.1		9.5	16 2.3	31.2		9.4	51.4	12.1	
7.0	35 18.6	29.2	L	9.5	29.2	45.4		8.3	22.4	7.0	K	9.5	7.2	26.1		9.3	51 14.1	15.4	B
9.0	29.7	24.0	L	9.5	38.6	28.2		9.3	42.9	50.1	K	8.6	17 14.7	13.3	K	9.5	54.6	6.2	
8.6	37.7	37.4	K	9.0	8 20.6	24.1		9.5	47.2	44.2		9.5	18 22.5	4.2		9.3	52 5.9	54.1	K
8.8	38.6	14.4	K	9.3	32.3	44.0		7.5	58.8	29.8	K	9.5	19 47.6	13.0		9.1	53 31.6	42.2	B
9.5	36 20.7	44 3		8.0	55.8	57.7	K	9.5	47 45.5	25.3		9.5	20 42.1	42.9		9.5	47.0	57.8	
9.5	37 21.5	47.2	B	9.2	10 1.6	37.8	K	9.4	50.2	55.1		8.8	50.9	2.1	L	9.0	52.2	45.2	K
7.2	38 43.7	20.6	K	6.2	11 46.8	51.3	K	9.5	48 52.5	9.9		9.5	58.5	53.0	B	9.0	54 0.2	33.8	
9.4	50.1	10.8	B	8.3	12 9.3	12.4		9.3	49 27.8	45.7	K	9.0	22 56.7	29.5	K	9.4	16.0	29.3	
9.4	51.2	24.1		9.2	13 19.7	15.0		9.0	50 19.8	37.7	K	9.4	23 14.4	20.2		9.5	34.9	14.5	
9.5	39 21.2	28.2		9.5	14 12.0	8.3		9.0	44.2	30.9	B	9.1	24 1.0	26.0		9.3	35.1	11.7	B
9.3	42.2	36.4		9.4	19.9	6.6		9.1	51 2.3	18.9		9.0	1.7	35.2	K	9.3	55 33.7	29.0	
9.5	40 1.6	43.1		8.9	38.8	3.8	K	9.5	37.2	33.0		9.5	58.2	48.1		9.5	56 29.2	36.9	
9.4	11.7	12.0		9.5	15 4.2	47.8		9.3	52 47.5	35.7		9.3	58.9	58.8		9.1	57 26.7	15.5	
9.3	15.6	44.1	B	9.5	16 23.6	40.3		9.1	53 49.1	28.4		9.5	25 22.2	51.9		9.0	30.7	50.4	
7.9	42 3.7	34.6	K	8.9	55.2	6.8	K	9.5	54 6.9	52.5		9.5	27 57.5	54.1		8.2	31.1	8.4	B
9.5	29.0	7.6		9.0	18 2.2	55.6	B	9.3	15.0	3.3		8.9	28 20.8	56.6	B	8.5	50.3	56.8	K
9.5	34.2	18.5		9.4	11.7	54.6		9.1	55 22.5	56.6		9.3	22.3	4.2		9.4	58 52.2	37.0	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	14ᵘ—15ᵘ	+34°			15ᵘ	+34°			15ᵘ—16ᵘ	+34°			16ᵘ	+34°			16ᵘ—17ᵘ	+34°	
m		′ ″		m		′ ″		m		′ ″		m		′ ″		m		′ ″	
9.2	59 43.6	17.8	B	9.2	28 47.2	34.5		9.5	54 47.6	4.1		9.4	20 27.6	35.6		9.2	41 0.8	57.9	
9.3	1 1.5	6.9		9.2	58.2	35.6	K	9.5	55 36.9	15.2		9.5	49.6	59.1		9.4	3.3	20.1	
7.8	17.2	31.2	K	9.4	29 24.5	7.3		9.5	46.6	27.6		9.3	50.3	36.4	B	9.4	3.4	0.2	B
7.0	2 29.7	16.3	L	9.3	46.7	52.1	K	9.4	56 21.7	39.4	B	9.0	21 15.1	10.4	K	8.5	42 20.1	28.8	K
8.8	34.3	2.1	L	8.7	30 24.7	48.2	K	9.5	28.7	53.3		9.4	17.1	30.7		9.3	25.5	21.5	B
9.2	35.7	13.2		9.3	54.5	8.7		8.5	40.9	51.6	K	8.9	37.2	20.2	K	9.5	53.6	23.9	
9.2	55.5	6.4		9.4	31 24.0	28.7		9.5	56.8	2.8		8.9	38.1	29.1	K	9.5	43 12.6	27.1	
9.5	3 10.8	24.6		9.2	27.8	21.4	B	9.5	57.0	18.3		9.5	52.2	37.3		9.4	.37.2	48.3	
9.5	4 13.7	8.1		9.3	54.9	54.6	K	9.3	57 18.9	32.4		9.5	22 11.0	38.4		7.5	40.1	18.8	K
9.5	24.2	55.3		9.2	33 16.0	30.2		8.3	58 10.9	24.8	K	9.4	20.1	46.7		9.4	46.8	54.9	
9.5	5 1.3	34.5	B	9.3	44.1	56.6	K	7.0	42.5	34.8	K	9.5	31.6	14.1		9.5	44 6.5	18.0	
9.3	7 2.7	14.4		9.5	34 21.5	9.0		9.4	59 25.8	37.8	B	9.5	23 36.4	55.5		9.1	13.6	1.3	
9.2	6.3	48.0	K	9.5	22.1	3.2		7.8	40.6	38.5	K	9.5	54.9	32.5	B	8.6	24.7	12.3	L
9.5	52.7	35.3	B	8.1	39.6	44.0	K	9.5	0 0.6	41.0		9.5	59.7	40.5	B	9.4	25.5	0.2	
9.3	8 34.6	20.8		9.5	40.6	52.0		9.4	9.3	13.5		9.4	24 3.5	42.5	B	9.4	45 10.7	6.6	
8.8	9 11.2	56.7	K	9.2	36 15.7	52.7		9.3	35.8	48.5		9.5	6.0	17.5		7.5	11.0	2.6	L
8.0	13.2	3.3	L	9.3	37 9.3	26.9		8.4	1 13.0	29.3	K	9.5	29.4	22.0		9.4	20.0	8.6	B
9.5	49.0	1.9		9.5	25.4	48.1	B	9.2	43.8	30.4	K	9.5	36.8	2.0		8.3	33.1	29.1	B
9.0	52.7	14.5		9.5	38 17.5	1.5		9.2	2 13.9	58.0		8.1	38.1	13.3	L	9.2	52.5	35.0	B
8.8	10 26.7	50.4	K	9.5	53.9	3.6		9.5	37.9	23.2		7.0	25 3.8	4.6	K	8.0	56.6	32.0	B
8.8	51.6	10.8	S	9.5	39 12.6	50.3		8.2	57.7	7.4	K	8.5	43.6	38.5	K	9.5	46 45.5	46.9	
9.4	11 4.8	14.7	B	9.0	40 17.9	14.1	K	8.2	3 48.0	21.7	K	9.3	26 42.6	44.6	K	8.6	47 51.3	55.8	K
9.3	15.0	48.0	K	9.0	33.3	36.5	K	9.5	4 11.3	45.1		9.0	46.4	36.6	K	9.5	56.7	30.0	
9.3	15.3	53.0	K	9.4	42.1	41.3	B	8.9	38.0	27.1	K	9.1	52.5	8.5		9.2	59.0	52.7	
9.3	20.7	13.0		9.5	41 12.7	48.8		8.1	6 23.7	47.1	L	9.4	28 10.7	52.5		8.8	48 5.5	22.1	K
7.3	12 6.4	8.0	K	9.0	33.9	24.7	L	9.4	8 5.3	35.1		9.3	14.7	17.3		9.5	33.0	50.3	
8.8	46.2	35.5	K	9.3	52.0	2.1		9.5	30.6	26.4		9.5	33.1	9.4	B	8.8	41.0	12.5	
9.5	14 33.2	14.9		8.7	56.6	21.0	L	9.5	47.9	30.3		9.5	33.1	57.9		8.0	49 43.5	19.7	K
9.4	44.7	44.2		9.4	42 22.8	6.2		9.5	9 0.8	59.7		9.5	35.1	1.8	B	8.5	50 54.5	37.9	K
9.5	15 4.7	15.0		9.5	48.7	46.2		5.7	15.1	14.1	K	8.5	37.9	24.6	K	9.4	51 16.0	47.5	
9.3	31.7	39.4		9.2	43 28.3	5.5	K	8.5	19.3	53.1	K	9.4	49.1	58.2	B	9.3	32.9	10.9	
9.5	45.3	58.0		9.5	41.7	46.5		9.2	10 2.1	50.1	K	9.5	53.7	49.7		9.5	52 2.1	0.4	
9.2	16 35.5	12.1		9.4	45.6	13.5		8.9	14.7	35.8	K	9.2	29 3.7	20.4	K	9.3	32.0	32.4	
9.3	35.9	18.1		9.4	44 10.1	11.0		9.4	21.2	43.2	B	9.2	27.0	17.4	K	8.1	58.8	56.2	L
9.3	48.3	14.6	B	9.2	18.3	14.7	B	9.1	29.3	5.7		8.7	30 8.4	22.8	K	9.5	53 35.0	22.8	
8.9	49.2	4.6	B	9.5	53.9	26.5		9.3	58.6	25.1		6.7	58.7	6.6	K	8.4	54 6.5	44.1	K
7.3	50.2	44.4	L	9.2	59.5	53.2		9.5	11 40.0	3.5		9.5	32 2.5	8.9		9.0	15.9	16.9	
9.4	17 1.1	8.6		9.4	45 37.4	57.7		8.2	12 0.6	38.1	K	9.4	36.1	31.5		9.4	17.3	14.9	
9.3	41.3	30.4		9.5	44.6	48.7		7.8	41.5	50.5	K	9.0	52.4	5.9		9.5	35.7	14.8	
9.5	18 42.7	51.1		9.4	46 45.8	3.3		9.4	58.1	53.0		8.7	33 1.8	8.9	K	8.5	50.1	35.2	L
9.3	19 8.2	36.3	B	9.1	47 13.3	43.8		9.5	13 5.6	16.1		9.3	8.1	13.3	B	7.5	51.5	33.2	L
9.1	11.0	42.1	K	9.2	25.1	58.2		9.5	6.4	58.4		9.5	45.1	27.7		9.5	59.5	25.6	
9.4	34.7	18.4	B	9.3	38.4	1.4		9.5	33.1	44.0		9.4	52.6	11.5		9.0	55 6.8	48.6	
9.5	20 24.6	52.5	B	9.4	43.5	4.8		8.5	14 2.6	36.9	K	7.7	34 27.6	54.3	K	8.9	56 8.5	14.6	
6.0	37.8	50.6	K	9.4	54.6	1.4		9.4	23.1	19.3		9.5	35 34.6	32.3		9.5	50.5	44.1	
9.4	21 41.2	44.7		9.5	48 30.7	31.3		9.3	37.1	15.1		7.5	36 20.5	52.6	K	9.5	57 15.5	33.1	
9.5	55.2	31.1		9.5	49 0.8	13.3		9.5	41.5	6.1		9.5	55.1	43.2		9.5	32.3	32.4	
9.5	58.9	22.1		9.5	24.0	2.7		9.1	15 11.1	58.7	K	9.0	37 44.2	34.6		7.5	48.5	44.5	K
9.5	23 39.2	41.1		7.3	25.3	48.1	K	9.4	34.4	52.9	K	9.4	49.1	33.6		7.0	58 9.2	35.2	K
9.5	59.8	9.2	B	8.2	59.9	20.6	K	9.5	34.6	42.2		6.0	38 29.6	18.4	K	6.2	39.7	59.6	K
8.4	24 23.9	15.9		9.5	50 24.7	46.0		9.3	51.1	58.9	K	9.5	46.1	28.1		9.5	59 17.6	26.4	
9.5	37.2	25.9	B	9.5	28.9	57.5		9.4	59.7	36.7		9.4	39 23.0	40.8		9.3	20.0	58.2	
8.7	46.2	44.5	K	9.4	41.3	24.4		5.2	16 54.0	9.6	K	9.5	25.1	46.6		9.4	22.1	30.3	B
9.2	56.1	27.9	B	9.1	52 49.0	59.2		5.3	17 1.8	2.5	K	9.3	37.2	11.9		9.5	32.6	22.6	B
7.2	25 6.4	58.3	K	9.1	54.0	1.5	B	9.2	2.7	25.9	B	9.2	40 7.2	5.0	K	9.5	0 0.0	59.2	
9.3	43.7	23.0		8.5	53 5.9	36.8	K	8.2	47.5	2.3	K	9.4	41.3	32.6	B	9.1	22.5	4.3	
9.3	58.0	5.2		9.5	8.7	32.6	B	9.5	58.0	19.9		9.4	45.8	9.2		8.5	37.5	17.0	K
9.5	26 22.8	36.3		9.5	24.4	1.0		9.5	18 23.5	4.7		8.2	47.3	37.5	B	9.2	1 18.9	11.2	B
9.4	41.4	31.8	B	9.3	54 11.0	11.1		9.5	19 57.6	34.7		8.0	48.5	3.7	K	8.3	26.4	7.4	K
9.5	28 20.7	38.3		9.4	32.6	37.5		9.5	20 20.6	47.4		9.0	49.8	4.7	K	9.0	44.6	6.1	K

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ᵐ	+34°			17ᵐ	+34°			17ᵐ	+34°			17ᵐ—18ᵐ	+34°			18ᵐ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	1 48.5	18.1		8.9	19 30.0	55.9	B	9.5	35 29.2	53.4		9.1	50 40.5	53.1	K	9.1	4 58.6	0.3	S
9.4	49.2	51.0		9.0	50.7	51.6	K	9.5	50.1	17.7		9.5	54.8	15.7		9.5	5 2.3	34.5	
9.2	54.5	30.6		9.5	52.2	54.1		9.0	51.0	2.2	K	9.1	51 8.9	12.9	K	9.4	4.5	44.7	B
9.0	2 17.9	1.2	K	9.3	20 3.2	43.6		7.8	36 15.1	21.5	K	9.0	36.6	17.8	K	8.0	11.1	30.6	K
9.1	25.4	52.3	K	8.4	8.7	19.0		9.4	18.2	46.5		8.5	38.3	59.0	K	8.8	36.1	39.8	B
9.2	48.5	53.4	K	9.0	29.7	12.4		9.1	49.2	42.5	K	8.8	42.4	49.7		9.4	40.4	46.6	B
9.4	3 17.0	41.0		7.8	37.4	7.8	R	9.3	56.9	37.4		9.5	44.6	5.7		9.5	42.6	26.0	
9.1	25.0	19.4		8.8	21 5.7	48.5	K	9.0	37 3.2	48.0	K	9.0	55.2	50.7	B	8.8	6 3.9	50.1	K
9.5	48.3	57.3		9.0	22.0	44.5	B	8.7	3.5	1.4	B	9.5	52 12.9	26.4		9.0	6.5	43.2	
9.0	4 1.0	37.6		9.5	31.7	41.2		9.2	49.1	7.2		9.5	22.2	11.9		9.0	19.0	55.3	K
9.4	27.0	47.9		6.1	33.5	49.7	K	7.8	38 7.4	0.8	B	9.5	36.9	52.8		9.4	7 3.2	50.1	
9.5	41.5	6.7		9.3	43.6	27.0	B	8.9	7.9	28.1		8.2	53 46.3	57.9	B	9.2	28.3	27.8	
9.5	59.9	9.0		9.0	51.9	28.6	K	9.4	18.1	57.3		8.5	49.6	6.0	K	9.3	42.9	3.2	
9.5	5 37.5	36.9		8.3	22 3.4	45.7	K	9.4	24.0	34.3	B	9.2	56.8	10.4		9.5	8 31.2	21.9	
9.5	47.7	7.2		9.0	43.9	35.3	K	7.7	24.5	50.4	K	9.5	54 18.4	39.4		9.4	9 24.4	25.0	B
9.5	6 35.7	38.9		9.5	51.6	6.7		8.4	54.9	43.6		9.0	29.9	15.7	K	9.5	37.3	3.2	
9.4	51.7	55.9		9.4	23 27.6	2.0		9.2	39 1.4	8.0		8.7	45.7	14.1	K	9.5	57.2	33.6	
9.5	54.0	5.0		9.5	24 12.0	48.3		9.3	18.4	5.5		9.5	59.9	37.8		9.5	10 8.9	29.7	
9.4	7 21.3	33.7		9.2	26.2	56.6	K	9.5	26.5	5.2		9.5	55 12.3	8.2		9.5	13.5	15.3	
9.0	56.2	40.9		9.2	27.1	3.1	K	9.5	40 14.0	7.3		9.5	36.9	31.6		9.4	18.2	6.1	
9.5	8 4.0	1.5		9.5	25 2.3	33.2		9.5	20.2	12.6		9.5	56 17.2	44.6		8.5	38.2	33.2	K
9.5	47.2	47.1		8.5	5.5	41.7	K	9.2	26.1	39.6	K	8.0	29.7	11.0	B	8.2	45.0	55.6	K
9.5	9 27.5	22.5		9.5	28.8	33.0		8.8	31.7	55.3	K	9.5	57 20.2	45.3		8.4	11 15.5	45.0	K
9.5	48.4	5.3		8.0	36.2	23.3	L	9.4	41 13.4	57.6		9.3	23.7	15.0		9.5	16.4	58.6	
9.0	54.6	22.4		9.5	44.0	31.7		9.3	33.6	48.1		9.1	25.0	7.7		9.5	19.8	52.5	
9.0	10 0.2	8.0	K	9.5	26 24.6	7.0		9.5	42 2.6	30.6		8.4	29.9	57.8	B	9.5	33.6	19.1	
9.2	6.1	27.7		9.3	29.5	31.1		9.5	16.4	40.7	B	9.5	56.3	51.1		9.0	45.4	47.7	
7.0	23.8	52.3	K	9.2	41.1	55.9		9.2	17.9	33.2	K	9.3	58 47.6	31.9		9.0	45.9	35.4	
9.5	46.2	23.5		6.5	49.6	23.2	K	8.0	35.6	57.0	K	9.5	59 8.9	39.1		9.4	52.5	0.4	
9.2	11 7.9	56.9	B	8.0	27 20.1	51.2	K	6.5	38.3	19.9	B	9.3	23.6	37.3		9.5	12 1.0	20.6	
9.5	9.6	26.4		7.7	28 36.2	39.4	K	9.5	43 21.3	30.5		9.1	25.9	33.3		9.5	4.8	6.2	
9.0	10.1	40.2	K	9.5	49.8	45.3		9.4	41.0	26.5		9.4	31.5	13.4		9.1	28.4	9.6	
9.3	11.0	4.8		9.2	29 11.2	35.0	K	9.4	48.8	32.2		9.4	42.4	0.8		9.2	28.4	51.9	B
8.7	13.6	21.5		9.3	25.9	27.4		9.5	57.9	22.2		9.4	51.2	47.5		9.2	47.9	42.9	
9.0	49.5	16.5		9.3	30.8	11.1		8.4	44 15.2	39.7		8.5	53.4	28.1		9.5	50.7	3.7	
9.3	50.8	36.7	B	7.0	34.1	50.5	K	8.8	36.9	2.5	K	9.5	0 11.8	53.0		9.3	59.9	54.3	
9.4	51.2	1.0		8.8	38.8	2.0		8.9	40.3	22.3		9.1	19.5	56.9		9.3	13 0.1	19.2	
9.2	12 49.7	0.5		8.5	30 8.1	13.7	L	9.2	54.6	11.6	K	9.3	34.3	4.5		8.1	57.6	4.1	B
9.5	56.7	48.5		9.2	11.2	28.0	B	9.3	45 9.1	35.4		9.5	35.4	58.7		8.8	14 46.2	33.4	
8.8	14 2.2	18.6		9.1	12.1	52.2	K	9.4	18.2	58.2		9.5	1 14.2	21.2		9.5	52.3	2.9	B
9.5	11.9	53.2	B	8.6	12.6	49.4	K	8.7	32.2	50.2	K	9.0	18.9	28.1	K	9.1	15 17.8	51.4	
9.4	12.3	12.3		8.0	22.8	18.8	L	9.5	46 3.2	58.7		9.2	33.4	38.3	B	9.5	26.6	35.7	
9.1	12.3	8.8	B	9.5	42.3	32.9	B	9.5	33.9	55.9		9.3	43.3	39.3		9.1	44.5	29.0	K
9.4	20.0	20.8		9.4	31 21.6	8.8		9.5	37.0	4.5		9.2	45.1	25.7		9.4	59.3	55.3	B
8.0	26.1	4.4	B	9.5	45.3	10.0		9.5	43.5	8.5		9.5	48.7	49.4		9.5	16 1.8	59.9	
9.5	36.9	40.9		8.3	32 5.2	17.5	K	8.2	49.1	53.2	K	7.5	2 1.2	49.7	K	8.3	8.6	49.2	K
9.0	15 17.7	48.8		9.5	11.5	48.5		7.8	47 2.2	14.3	L	9.3	17.6	32.6		9.5	18.9	1.9	
9.5	32.4	1.7		8.8	11.8	46.0		9.4	33.1	30.3		9.0	17.9	12.5		9.5	27.0	22.1	
9.5	41.4	8.6		9.5	14.5	59.4		9.5	35.6	30.3		9.5	3 4.2	49.1		8.2	18 9.2	56.6	K
9.1	16 3.8	26.2	B	9.4	39.2	39.8		9.5	54.5	35.5		9.1	42.9	59.5		8.0	9.6	46.8	B
9.4	32.7	19.4	B	9.5	33 14.7	47.0		9.3	48 5.4	15.0		9.5	55.7	53.5		7.7	58.5	26.0	K
9.5	48.9	54.2		9.2	19.5	34.6	K	9.4	23.6	25.0		9.3	4 1.0	21.3	B	9.3	59.2	47.8	
9.1	17 1.7	10.7		9.5	26.9	42.5		9.5	34.6	5.5		9.4	4.9	35.6		9.2	19 1.3	56.2	
8.9	16.7	46.0		9.2	31.4	35.6		9.5	38.7	27.9		9.0	8.1	29.1		9.5	4.6	35.1	B
9.5	26.2	49 8		9.0	39.6	53.2	K	7.8	47.9	42.5	K	9.3	9.7	58.5	B	8.2	11.7	11.5	K
7.9	27.5	18.9	B	8.7	57.6	2.4		8.5	53 6	12.5	K	9.3	32.6	41.5		9.5	25.1	55.4	
9.5	42.7	53.0		9.0	34 0.5	49.1		8.5	57.6	45.6	K	9.2	33.2	53.9		8.5	32.5	52.1	
9.5	59.5	34.8		9.4	31.9	42.3	B	9.0	49 11.9	41.5	K	8.2	39.9	13.4	K	9.5	37.0	57.1	
9.5	18 16.3	59.9		8.0	35 10.6	17.6	B	9.5	51.7	41.9		9.5	47.1	36.3		9.4	47.2	38.3	
9.3	59.2	42.3		9.5	21.6	2.7		9.5	50 25.5	29.1		9.4	55.2	37.3	B	8.2	50.5	57.3	K

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ	+34°			18ᵘ	+34°			18ᵘ	+34°			18ᵘ—19ᵘ	+34°			19ᵘ	+34°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	19 52.6	14.0		9.5	31 56.3	35.2		9.4	43 12.1	57.2		9.5	53 47.0	57.9		9.5	4 0.0	17.2	
8.4	20 9.5	9.1	L	8.2	59.9	0.5	K	9.5	18.0	5.8		9.5	57.2	36.5		8.6	1.3	57.4	K
9.4	53.7	50.0	B	9.2	32 11.7	54.6		8.0	23.2	16.8	K	9.5	54 23.7	3.9		9.0	12.8	0.7	B
9.5	21 15.6	30.9		9.1	14.1	47.2		9.5	28.3	54.2		9.5	27.6	27.3	B	9.5	44.1	46.0	
9.5	37.7	49.0		9.4	23.6	52.2		8.7	32.5	17.5	K	9.4	38.1	44.8		9.1	54.2	13.7	K
9.1	43.3	43.5		9.4	28.2	34.5		8.3	46.0	22.2	K	9.5	49.9	14.5		9.4	56.9	56.7	
8.3	45.8	35.8	L	8.5	41.7	58.3	K	9.5	44 2.1	56.7		8.9	56.5	35.8		9.5	5 19.0	41.7	
9.5	48.4	3.2		9.5	33 12.4	52.9		8.8	9.3	28.1	K	9.1	55 0.2	49.5	B	9.3	48.8	16.0	
9.2	51.1	54.9	B	9.4	14.5	55.6		8.3	17.0	5.4	L	9.1	3.2	40.4		9.3	50.2	13.3	
8.8	22 18.5	37.3		9.5	25.1	34.8		9.4	24.8	12.8		8.9	35.1	11.9		9.1	6 15.7	13.3	
8.4	25.7	57.6		9.0	53.1	22.9		9.5	37.2	58.0		9.5	35.2	14.6		9.0	18.5	16.8	
9.5	55.0	50.4		9.5	34 14.2	22.4		9.5	45 25.1	52.1		8.5	51.0	27.2		9.0	31.4	15.6	
9.5	23 1.5	49.4		9.5	23.9	37.5		9.3	35.7	3.2		8.7	56 0.5	17.8		9.5	37.2	54.1	
9.4	45.3	6.8	B	7.7	35 2.5	17.3	K	7.3	45.0	13.4	K	9.3	15.6	56.3		8.7	45.0	51.6	
9.5	24 25.1	12.4		9.5	24.3	55.3		9.5	55.3	10.8		9.4	32.9	7.4		7.9	51.3	8.2	L
9.5	44.2	29.9		9.4	34.7	25.4		9.1	46 8.5	14.3	K	8.5	33.4	35.6		9.0	58.5	51.1	
9.0	46.9	42.2		9.5	48.0	53.3		8.7	17.9	22.5		9.4	36.7	50.5		9.3	7 7.4	33.3	
9.2	53.3	3.8		9.4	50.8	57.6		9.5	26.4	0.1		9.3	42.3	22.2		9.5	11.0	28.9	
9.1	25 1.4	20.1		9.4	58.5	50.6		9.3	55.3	29.1		7.7	57 22.1	22.3	K	9.3	28.2	28.9	
9.5	5.8	40.8		9.5	36 7.7	36.7		9.5	47 3.5	5.1		9.5	23.9	30.6		9.3	33.3	13.1	
9.4	11.2	7.7		9.0	38.3	54.0	K	9.4	3.5	38.2		9.1	35.3	46.7	R	8.8	34.9	55.6	K
8.7	39.1	10.4	B	9.2	38.4	44.6		9.5	21.6	7.3		9.5	41.8	48.7		9.5	40.5	3.2	
8.5	44.5	32.8		9.5	49.0	3.4		9.0	31.3	37.8	K	9.0	42.2	23.5	K	9.0	41.8	32.4	
9.5	51.3	21.5		9.1	52.5	55.8	K	9.4	43.2	39.0		9.2	58 0.1	12.4		9.5	52.3	5.1	
8.7	26 0.2	43.4		7.0	54.5	36.0	K	9.4	51.1	52.8		9.1	15.9	12.4		9.5	55.3	16.4	
8.1	1.3	56.5	L	8.5	56.5	36.0	K	7.9	48 13.3	26.6	L	9.2	23.6	59.8	K	8.0	59.8	14.7	L
9.3	25.7	31.8		8.9	37 2.5	0.1	K	9.5	31.8	56.2		9.3	39.3	28.7		9.0	8 10.6	12.3	R
9.5	29.6	22.9		8.3	5.9	25.2	K	9.4	41.7	40.0	B	9.1	59 1.1	3.6		8.1	19.3	40.0	
9.5	42.8	56.7		9.0	6.5	10.9		9.4	41.7	19.7		8.8	17.3	33.0	B	8.0	24.3	9.9	L
9.5	27 2.6	32.3		9.0	8.2	31.5		9.2	49 30.3	25.4		8.4	22.4	59.1	K	9.5	53.0	4.1	B
9.5	7.7	5.4		9.5	17.8	33.0		9.0	50.1	55.0		9.5	32.9	25.9		9.5	53.3	34.3	
9.5	23.5	40.0		9.5	28.4	32.3	B	9.1	59.5	5.8		8.6	36.7	42.6		9.3	9 2.0	33.1	
9.3	26.5	25.9		9.4	45.6	55.3		9.5	50 1.4	18.1		8.6	46.3	46.6		9.5	3.1	35.1	
9.5	45.3	23.3		9.4	55.9	39.4	B	9.5	13.1	1.5		8.4	49.0	48.1	B	9.5	5.6	35.3	B
9.4	58.1	0.1	B	9.2	38 10.3	58.9		9.5	20.4	40.8		8.9	59.1	6.0		7.2	9.7	18.5	K
8.3	28 14.9	27.1	K	8.5	19.5	51.3	K	9.5	29.7	47.1		8.9	0 1.2	46.5		8.2	28.8	46.4	B
9.5	18.8	49.3		8.2	41.5	22.7	L	9.5	31.6	12.3		9.5	8.3	14.3		9.5	28.9	51.1	
7.5	55.5	20.2	K	9.0	39 8.9	40.5	K	9.4	51 0.4	38.3		9.5	11.5	17.1		9.1	38.4	32.8	K
7.8	29 14.5	17.7	K	9.0	19.8	17.5	B	9.5	6.2	1.9		9.3	12.5	47.6		9.5	44.8	35.3	
9.5	28.9	58.3	B	9.5	22.7	32.7		9.3	25.8	9.9		9.4	28.5	23.7	B	9.0	45.5	11.3	K
9.1	31.4	47.4		8.7	30.2	36.0	B	9.2	29.5	29.9		9.5	37.6	4.7		9.3	55.4	57.1	
9.1	32.1	33.6		7.0	51.5	52.2	K	9.2	30.6	40.5		9.2	43.3	48.8		9.5	10 7.7	12.5	
9.5	45.6	1.0		9.2	53.0	27.7		9.5	33.3	38.0		8.3	57.3	11.5	K	9.5	27.9	48.4	
9.3	48.2	36.2		8.8	40 0.5	25.2		9.3	33.6	41.9		9.5	1 6.7	19.4		9.5	46.1	5.1	
6.4	59.5	20.4	K	9.4	1.9	50.1		9.3	37.7	3.0		8.6	17.3	9.3	K	9.2	57.9	59.7	K
9.4	30 3.8	58.4		9.4	6.6	12.6		9.0	41.2	35.6		8.8	20.3	58.1	B	9.5	11 28.2	20.6	
8.7	4.0	47.9		7.9	12.4	3.5	K	8.7	48.3	44.7	R	9.5	37.2	42.9		9.2	43.5	57.9	K
9.3	8.5	55.6		9.0	14.4	21.8		7.6	52.8	40.2	B	9.0	46.2	47.3	B	9.4	12 17.8	0.5	
9.3	35.3	56.8		9.5	25.6	30.8		9.5	52 9.9	55.6		9.5	2 3.0	2.1		9.4	27.7	38.0	
9.5	39.1	27.7		7.3	34.7	21.9	S	9.2	33.1	43.2		9.5	15.5	17.4		8.2	41.0	30.3	L
9.4	48.7	45.5		9.4	41 4.6	6.4		9.5	36.3	6.7		7.5	16.4	9.7	K	9.5	43.9	17.1	
9.5	31 0.0	19.8		9.0	12.5	50.2	K	8.8	44.4	16.3	K	9.3	50.0	51.5		9.3	55.1	57.8	
9.4	21.0	56.3		9.3	13.1	12.6		9.3	46.5	18.4		9.0	3 2.1	26.2		9.5	13 1.6	32.9	
9.3	23.6	57.3		9.4	18.3	5.7		9.1	53 0.9	13.2	B	9.3	14.1	6.2		8.2	24.5	57.6	R
9.4	30.4	32.6		9.5	36.8	5.1		8.6	15.7	55.5	K	9.5	24.3	43.5		8.8	44.5	46.6	K
9.5	42.9	53.0	B	9.4	45.4	54.3		9.4	22.3	39.9		8.5	26.3	31.4	L	9.5	14 12.5	31.4	B
8.0	45.3	44.9		8.6	42 16.0	5.7	K	9.5	27.4	49.3		6.5	28.4	31.4		9.5	17.3	59.3	
9.1	47.5	31.3		9.5	30.5	52.9		9.5	31.2	34.6		8.5	44.3	21.5	L	8.0	32.6	30.4	K
9.5	49.8	41.4		8.5	47.6	29.1		9.4	42.0	35.9		6.5	46.3	21.5	S	9.5	45.0	20.5	
9.5	52.4	8.2		9.5	56.4	30.8		9.5	42.8	40.0		9.5	52.7	50.2		9.3	15 0.2	1.7	

m	19ʰ	+34°	
	35o1—356o		
8.7	15′ 11.0	41.2	K
8.0	11.1	37.5	K
6.4	15.8	54.8	K
8.9	23.9	10.5	L
8.9	33.5	52.8	K
9.5	50.0	41.6	
9.5	50.7	39.7	B
9.1	54.8	5.1	L
9.5	57.3	51.1	
9.5	16 2.5	50.9	
8.1	4.5	1.2	L
9.5	20.9	6.6	
9.5	21.8	0.9	
9.5	35.7	54.1	
9.5	39.6	58.2	
9.5	17 8.0	20.4	
9.5	14.9	28.9	
9.5	28.2	43.5	
9.3	35.8	25.2	R
9.5	39.7	53.4	
9.5	47.8	11.7	
9.4	54.2	59.8	
9.5	18 10.9	24.3	
9.4	30.1	50.0	B
8.5	31.8	7.2	K
9.4	35.4	59.1	
8.9	49.3	17.4	
9.5	19 1.0	33.9	
9.3	6.4	11.7	
9.5	8.4	5.3	
9.0	10.8	22.0	
9.5	12.6	47.5	
9.5	25.4	5.1	
9.1	36.7	36.3	
8.8	37.8	48.4	
9.4	51.1	53.3	
9.5	58.0	36.8	
8.6	20 2.8	25.2	K
9.5	3.5	0.8	
9.3	18.7	56.8	
9.2	28.9	23.9	
9.5	39.3	1.2	
9.1	46.9	19.0	
9.5	48.8	51.4	
9.5	51.1	3.0	
9.4	21 4.7	46.6	B
9.5	5.3	51.1	
9.5	8.4	36.5	
9.4	25.8	39.6	
9.1	35.3	11.6	K
7.7	39.0	53.3	L
9.5	42.2	43.5	
9.5	42.2	44.0	
7.7	43.8	34.1	L
9.5	58.8	20.3	
9.5	22 1.8	18.1	
9.4	1.9	19.8	
9.5	11.3	43.5	
9.5	11.5	23.2	
9.5	20.0	18.8	

m	19ʰ	+34°	
	356i—362o		
9.5	22′ 23.0	0.9	
9.4	32.9	45.7	
9.5	39.2	15.0	
9.0	23 6.1	59.1	
9.5	15.8	25.8	
8.2	18.9	18.4	K
9.5	23.8	33.0	
9.5	32.7	57.4	
8.9	41 9	4.0	
9.4	43.3	38.1	B
9.5	43.8	34.6	
8.5	45.6	54.0	R
9.4	54.1	13.1	B
9.5	57.8	46.3	
9.3	58.4	54.9	
9.3	24 11.4	29.7	
9.2	15.0	35.6	
8.4	45.0	0.4	K
9.4	25 10.8	47.1	
9.5	11.0	12.5	
8.0	19.6	47.8	
9.5	40.1	48.5	
9.2	52.8	36.4	
9.4	52.9	51.3	
8.9	26 3.8	59.8	
8.7	3.9	54.8	B
8.2	7.0	9.7	L
9.5	8.7	23.7	
9.5	17.6	51.2	
4.6	23.1	8.7	L
9.4	23.5	27.8	
9.5	27.6	41.4	
9.5	29.6	28.0	
9.3	36.0	46.1	
9.1	39.5	0.2	
8.6	58.8	54.0	
9.5	27 1.5	29.3	
8.9	14.0	0.7	
8.6	22.4	29.2	
9.0	23.8	46.2	
8.9	42.8	17.3	
9.0	57.9	6.4	
9.2	28 6.1	3.3	
9.0	7.0	34.7	
9.3	12.4	52.9	
9.5	18.9	17.4	
9.5	21.8	15.1	B
9.5	22.9	19.8	
9.5	23.5	40.9	
9.5	41.0	47.5	
9.5	45.2	19.1	
9.5	29 13.9	46.3	
9.5	16.6	50.0	
8.8	18.0	58.8	
9.4	27.4	29.7	
9.5	30.5	13.4	
9.1	36.9	6.0	K
9.5	39.4	28.7	
9.5	40.1	42.8	
7.0	59.8	22.0	K

m	19ʰ	+34°	
	362i—368o		
9.5	30′ 21.4	29.1	
9.5	33.2	54.8	
9.5	35.3	3.6	
9.5	37.0	21.1	
7.1	46.1	53.6	L
9.1	48.2	31.6	K
9.5	52.8	29.1	
9.2	31 0.3	8.2	
9.1	4.9	57.3	K
9.5	15.1	40.1	
9.5	25.5	55.2	
9.4	29.7	46.2	
9.5	35.6	7.9	
9.5	41.9	44.2	
9.4	47.6	42.4	B
9.5	58.5	7.0	
6.5	32 18.0	41.3	L
9.4	21.3	45.3	
8.7	31.0	52.7	K
6.6	40.8	55.9	K
9.0	50.8	18.3	
9.2	33 24.6	1.4	
8.5	24.6	6.8	
9.3	27.6	39.1	B
8.5	33.8	54.6	K
9.5	39.4	40.8	
9.5	40.9	40.2	
8.0	45.0	37.1	L
9.5	50.3	56.4	
9.1	34 9.8	57.2	
8.7	13.3	58.7	K
9.5	37.4	21.4	
8.0	44.8	48.7	K
9.3	50.1	31.2	
8.5	51.3	54.4	K
9.5	58.4	21.3	
9.5	35 6.8	38.6	
9.4	10.4	53.9	
9.2	11.8	57.4	K
9.0	21.5	9.5	
8.8	29.0	3.4	B
8.9	29.8	29.3	
9.5	48.3	6.9	
9.3	54.5	13.3	
9.3	36 0.0	45.9	
9.5	4.8	53.1	
9.1	20.0	19.5	
9.0	42.5	9.0	K
9.5	45.6	43.6	
8.5	49.1	51.5	
9.3	52.4	29.2	
9.5	37 7.4	8.7	
9.0	31.4	1.9	
9.2	32.2	19.3	
8.0	34.5	4.6	K
9.3	36.6	47.2	B
9.1	42.8	23.6	K
9.5	43.0	31.7	
9.5	47.2	20.9	
9.5	53.2	3.9	

m	19ʰ	+34°	
	368i—374o		
8.7	38′ 1.0	31.7	K
9.0	3.8	29.5	K
8.8	5.1	43.6	
9.5	6.5	12.3	
9.3	7.6	12.6	
9.5	23.5	42.9	
9.5	30.6	21.1	
8.9	54.6	58.7	K
9.4	39 0.8	9.0	
9.4	3.0	9.4	
7.0	12.3	4.0	L
9.5	21.8	33.9	
9.5	32.4	12.5	
9.4	34.2	13.8	
9.4	36.4	11.7	
9.4	37.9	38.8	
9.1	38.8	12.4	B
9.5	53.3	55.4	
9.5	40 2.2	16.1	
9.3	3.1	5.6	
6.6	26.8	39.5	K
9.0	27.8	40.1	K
9.4	28.3	53.2	
9.5	43.9	11.8	
9.5	58.5	57.6	
8.5	41 2.7	41.0	K
9.5	15.8	17.8	
8.0	29.3	4.1	
9.5	29.4	38.3	B
9.0	35.5	54.9	K
9.5	40.1	6.5	
9.4	54.4	0.9	
9.5	57.3	16.1	
9.4	58.0	8.1	
9.4	42 8.0	22.5	
9.5	14.6	41.3	
9.4	23.8	6.5	
9.5	23.8	3.3	
9.0	37.8	52.8	
9.1	38.7	35.8	
9.5	39.3	9.6	
9.5	41.8	51.3	
9.5	47.8	25.9	
9.1	43 4.1	16.3	
9.1	6.3	28.4	
9.5	8.5	34.1	
7.0	19.8	56.8	K
9.5	22.9	8.3	
9.5	43.5	11.3	
9.3	52.9	25.1	
9.5	53.8	38.8	
9.4	55.0	48.2	
8.9	44 0.0	44.7	B
9.5	4.1	54.9	
9.5	25.5	56.0	
9.4	27.9	6.7	
9.5	28.4	3.9	
9.3	30.4	2.0	
9.2	30.6	58.5	
9.4	36.8	30.9	

m	19ʰ	+34°	
	374i—380o		
9.5	44′ 39.3	24.7	
9.0	43.2	53.5	B
9.3	45.1	10.5	
9.0	53.9	31.7	
9.5	56.4	41.4	
9.2	58.2	19.9	
8.6	59.0	0.9	L
9.5	45 8.7	53.9	B
8.5	11.6	34.5	
9.5	15.2	36.3	
9.3	21.3	8.4	
9.0	25.7	20.4	
9.4	26.5	27.8	
8.9	34.0	13.9	
9.4	52.2	25.3	
8.3	46 2.7	39.6	
8.9	9.5	11.2	K
9.2	11.3	0.7	
9.3	16.5	19.1	
9.5	20.0	50.7	
9.5	20.9	25.8	
9.5	35.1	27.0	
9.2	36.5	0.6	
9.4	42.6	27.7	
9.3	50.1	23.5	
9.1	58.9	14.4	K
9.1	47 20.3	46.0	
8.8	26.1	10.4	K
9.3	26.9	26.5	
9.4	40.1	4.6	
9.5	44.0	54.5	
9.0	45.2	44.6	B
9.5	49.4	34.7	
8.8	54.3	40.1	
9.4	48 3.1	33.7	
9.5	8.8	48.3	
9.5	17.7	29.2	B
6.8	20.3	12.1	K
9.5	22.2	50.9	
9.4	29.8	33.7	
8.7	32.9	4.8	K
9.0	34.5	7.0	
8.9	35.7	1.2	K
9.0	38.8	10.0	B
9.5	47.7	11.8	
9.0	52.4	6.9	
8.6	49 21.8	37.8	
9.5	27.9	6.2	
8.7	29.5	33.2	K
7.5	32.6	31.2	K
9.5	45.7	11.7	
9.5	50 11.0	19.1	
9.5	11.1	24.3	
9.0	19.3	36.3	K
9.5	32.4	6.9	
9.3	45.2	59.9	
9.2	46.3	51.5	
9.2	51.8	41.9	K
9.2	51 3.1	34.9	
9.3	4.3	29.7	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ᵐ	+34°			19ᵐ—20ᵐ	+34°			20ᵐ	+34°			20ᵐ	+34°			20ᵐ	+34°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′
9.5	51	13.3	21.1	9.5	58	42.8	32.4	9.4	7	47.5	12.1	9.5	15	37.8	15.0	9.1	23	35.4	57.3	
9.5		24.0	36.2	8.6	59	2.0	34.9	L	9.0		49.9	36.5	8.3		59.5	32.2	K	9.5		42.4	5.5	
9.5		34.8	36.2	9.5		30.7	35.1		8.2		51.2	28.3	L	9.4	16	9.6	36.1	B	9.3		44.2	32.4	
9.3		40.4	47.1	9.4		40.0	53.9	B	8.9		52.3	42.4		9.5		12.3	37.6		8.9		49.3	55.6	K
9.5		43.2	17.7	9.5		41.4	51.4		9.4	8	0.0	59.7	B	9.4		13.8	41.3	B	9.3	24	4.6	36.3	
8.2		46.8	38.4	K 8.3		54.6	34.4	L	9.5		5.0	55.0		9.5		14.1	57.2		9.5		7.7	18.1	B
8.5		49.0	11.7	8.7	0	6.7	30.0	K	9.5		21.0	35.0		9.4		17.0	37.3		9.5		19.4	39.9	
9.4	52	6.1	30.5	9.3		9.8	38.2		9.5		23.1	12.6		9.5		21.0	40.9		9.1		24.2	18.4	B
9.5		29.8	38.2	9.3		33.9	25.1		9.4		27.7	57.2		9.5		25.0	42.0		9.5		35.4	24.5	
9.1		31.0	20.2	9.5		34.8	48.3	B	7.6		42.7	55.4	K	9.0		27.0	59.2	B	9.4		35.8	16.7	
9.0		39.9	18.0	8.3		42.4	58.3	L	8.2		43.2	32.4	K	9.5		31.4	35.1		9.5		42.3	26.7	
8.9		40.3	59.5	K 9.2		42.7	54.7		8.8		49.0	26.3	K	9.5		36.9	46.1		9.4		49.8	25.2	B
8.1		43.4	1.7	L 7.5	1	5.6	43.1	K	9.5		51.2	34.5		9.4		39.8	12.7		9.5		55.5	56.4	
9.2		54.1	54.2	8.5		10.6	29.5	L	8.6		55.7	58.4	K	9.4		41.7	20.1		9.3		57.6	22.8	
9.0		54.4	48.7	B 8.0		12.8	36.8	B	9.5	9	1.2	7.8		7.2		55.8	31.7	K	9.0	25	0.3	11.9	B
9.3		54.9	49.7	9.2		15.6	55.9		8.5		9.6	12.0	B	9.4	17	46.3	20.3	B	8.6		5.6	51.7	
8.2		57.6	6.9	L 9.2		24.4	53.4		9.0		27.1	33.3		9.5		55.0	48.3		9.5		14.8	16.5	
9.5	53	7.9	10.3	9.5		25.2	13.2		9.5		36.9	3.7		9.3	18	6.8	39.9		9.5		15.5	32.3	
8.8		11.5	40.7	9.5		46.5	57.5		9.3		41.2	15.5		9.3		12.2	7.8		9.2		22.6	8.8	
9.5		17.7	3.8	8.3	2	2.2	19.2	B	9.5		53.0	35.0		9.5		28.9	32.3		9.1		29.0	50.3	
9.4		23.0	58.0	6.0		7.5	0.2	L	9.5		53.4	39.9		9.2		37.8	13.7		9.1		55.2	22.4	
9.2		24.8	42.3	7.9		25.4	41.2	B	9.5	10	0.2	3.1		9.5		41.0	48.7		9.3		55.8	50.4	B
8.8		25.3	15.6	9.5		50.6	53.2		9.5		3.2	28.3		9.3		55.0	43.0		9.4		59.8	51.0	
9.5		36.6	48.8	9.5	3	9.4	10.1		8.4		11.0	55.7	K	9.4		55.5	53.4		9.5	26	10.6	29.3	
8.5		57.8	5.7	L 9.2		25.8	58.6		9.2		13.0	30.8		9.2		56.2	11.0	B	8.8		13.6	47.6	
9.5		59.9	25.6	9.4		44.1	58.1		9.2		22.1	0.2		9.5		56.2	58.0		9.2		23.2	47.4	
9.4	54	11.8	25.9	9.5		45.4	56.2		9.1		27.0	42.6		8.9	19	1.7	0.4		9.5		30.5	27.6	
9.1		22.0	54.6	8.3		51.3	17.6	L	9.5		33.9	47.5		8.8		14.4	11.2	B	9.5		49.9	48.8	
9.4		26.9	22.9	B 9.4		57.8	59.0		8.8		36.5	35.9		8.8		23.7	11.6	B	8.3		52.5	25.3	
8.4		28.1	53.4	9.5		59.2	17.3		9.0		39.2	18.9		9.2		34.8	8.2		9.3	27	3.0	31.5	
9.5		45.9	10.2	9.5	4	2.4	8.4		9.3		50.4	0.1		9.4		38.8	53.4		9.3		3.9	27.5	
8.3		52.0	57.4	L 9.5		5.5	6.2		9.5		57.5	39.9		8.5		49.4	32.9		9.3		12.1	46.3	
8.4		53.8	3.5	K 9.5		8.3	53.2		8.7	11	13.2	7.3		9.3		57.3	2.8		9.4		26.4	5.8	
9.5	55	7.5	54.1	9.5		29.5	54.1		9.0		35.6	48.5		9.0	20	10.5	18.9		9.0		32.4	55.2	
9.2		23.2	16.6	9.5		32.3	55.6		9.1		42.3	42.1		9.5		20.0	41.6		9.1		54.8	59.8	K
9.5		38.5	1.8	9.0		34.6	38.4		9.5		52.9	17.1		8.9		24.1	44.3	K	9.5	28	0.5	44.3	
9.0		42.8	23.0	K 9.5		37.5	49.8		9.2		53.0	12.7		9.5		32.8	25.0		9.5		4.2	54.2	
9.4		46.2	2.3	9.3	5	0.8	54.9		9.5	12	3.1	2.8		9.4		34.1	49.9		9.4		13.1	16.7	
9.0	56	1.8	44.2	K 8.4		4.4	26.0		9.4		10.0	51.7		9.5		38.2	2.8		5.4		16.4	45.6	K
8.6		2.6	10.7	L 9.3		17.0	42.3		9.5		18.0	4.0		9.5		44.8	37.3		9.5		20.3	37.0	
9.3		4.7	28.7	9.5		27.7	59.9		9.0		18.5	22.0		9.4		48.1	46.2		7.2		21.8	10.6	L
9.3		13.7	43.3	9.1		30.5	23.1		9.5		20.8	26.9		9.5		50.0	10.5		9.0		34.4	50.4	K
9.3		25.0	24.0	9.5		50.2	41.8		9.0		40.6	39.0		9.3		50.0	7.1		9.5		41.7	18.2	B
9.5		29.1	58.0	9.5	6	6.9	53.5		9.5		47.0	50.1		9.4		51.0	7.7		9.5		45.3	43.3	
9.4		29.8	50.4	9.5		12.3	34.9		9.5		49.0	54.1		8.3	21	0.9	33.5		9.1		55.8	59.7	K
8.9		31.6	4.7	L 9.4		23.4	17.6		8.2		56.2	34.8	K	9.0		24.2	43.1		8.5	29	7.4	23.4	K
7.6		34.6	55.8	K 9.0		24.2	9.7	K	5.4	13	4.0	32.1	K	9.4		46.8	45.6		9.4		7.9	51.3	
9.0		45.8	17.8	L 7.4		27.5	2.8	K	8.5		11.7	39.5	K	9.0		48.3	51.8		8.8		20.4	20.2	K
9.3		47.4	41.3	9.3		33.1	15.7		9.0		17.0	8.3		9.3	22	11.8	18.4		9.5		41.8	54.5	
8.9		55.6	54.6	K 8.0		44.4	25.1		9.5		45.1	7.8		9.5		19.4	17.0		9.4		49.7	20.2	
9.0	57	10.5	25.5	9.5		46.3	48.8		9.1		57.5	25.1		8.0		38.9	37.0		8.5		56.4	40.2	S
9.5		32.9	39.7	9.5		50.3	51.4		9.5	14	4.0	16.2		9.5		45.6	42.4		9.5	30	13.3	27.5	
9.5		39.6	25.2	8.7		53.4	29.0		9.1		13.8	6.8		9.5		50.5	29.5		9.5	31	15.5	24.7	
9.4		40.5	49.9	B 9.4	7	6.8	58.7		9.2		20.6	42.1		9.5		55.6	1.0		8.8		28.1	7.4	K
9.5		44.9	44.4	7.8		12.2	44.6	K	9.5		25.0	9.7		9.4	23	2.4	48.5		8.2		41.6	55.8	
9.5	58	11.6	29.4	8.1		20.7	2.3	K	9.5		55.6	58.6		9.5		6.6	47.0		9.4		46.7	22.7	
9.2		15.6	11.6	9.4		23.0	9.8		9.5	15	2.4	10.3		9.5		9.8	17.9		8.5		55.4	20.0	
8.5		16.1	27.8	L 9.3		26.7	58.5		8.5		5.0	47.5		9.5		9.9	37.4		7.8	32	3.0	41.4	K
9.4		18.9	19.5	8.0		28.7	23.3	K	9.4		10.9	44.0		9.5		17.8	26.3		9.3		9.4	2.2	
9.4		20.0	24.2	8.7		46.8	35.4	B	9.5		26.2	58.4		9.5		30.6	22.8		9.5		18.9	52.6	B

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵘ	+34°			20ᵘ	+34°			20ᵘ—21ᵘ	+34°			21ᵘ	+34°			21ᵘ	+34°	
m				m				m				m				m			
9.5	32′ 20.8″	14.9		9.2	42′ 42.7″	53.9	B	9.5	53′ 1.0″	22.7		9.5	0′ 19.5″	15.1		9.5	8′ 3.5″	28.3	
9.5	23.7	6.3		9.5	48.2	55.1		8.8	2.2	56.7	K	9.2	38.3	11.1		8.5	11.3	12.7	K
9.5	25.4	32.0		9.5	50.0	3.2		9.5	4.6	23.6		9.5	40.2	0.8		8.5	14.1	32.0	
9.5	27.9	52.1		9.5	51.7	54.6		9.2	16.6	53.2		9.1	42.3	7.9		9.2	16.4	36.2	
9.3	45.9	53.1		9.4	43 10.0	21.7		9.5	18.7	7.8		8.3	52.0	19.9		9.5	17.8	29.7	
9.5	33 6.4	39.9		9.5	14.5	48.4		8.8	22.7	59.8		9.5	1 15.0	31.7		9.3	20.4	38.2	
9.5	25.2	59.2		9.0	14.9	45.9		8.8	23.1	1.0		9.5	27.1	5.3		7.8	27.3	10.3	K
8.8	45.2	12.2		9.3	27.6	58.5		9.5	25.9	1.5		9.5	30.2	9.3		9.2	30.0	32.2	
9.4	34 11.4	56.4	B	9.5	28.1	2.4		8.4	35.2	54.7		9.4	47.0	42.3		9.2	31.6	40.7	
9.4	12.3	36.9		9.5	33.2	35.0		9.3	50.7	54.7		9.5	58.5	47.6		8.9	34.1	1.7	
7.2	15.9	52.5	K	9.5	43.3	4.3		9.5	53.8	5.3		9.3	2 9.4	44.1		9.5	38.8	58.1	
9.4	23.9	56.0		9.5	52.7	47.3		9.4	56.5	39.4		9.5	17.3	14.0		9.5	9 5.0	37.2	
9.0	36.0	40.6		9.5	52.8	17.7		8.8	54 12.0	11.5		9.5	22.3	17.7		9.5	11.8	35.0	
7.5	35 9.0	31.4	L	9.5	44 10.6	36.2		9.4	30.4	35.0		8.2	22.8	45.4	L	9.2	31.1	46.1	
8.9	14.8	23.0		9.4	22.5	15.2		8.3	30.9	39.9		9.5	32.3	5.4		9.3	43.4	55.3	
9.5	15.6	42.2		9.4	34.8	7.7		9.5	38.7	5.6		9.3	37.0	9.6	B	9.3	46.3	18.9	B
8.9	22.4	45.5		9.3	39.5	40.8		9.0	43.5	47.1		9.5	51.4	17.0		8.8	47.0	32.8	
8.5	31.0	51.2	K	9.5	44.6	45.2		8.7	58.4	48.3	B	9.5	51.6	53.7		8.3	50.3	16.7	
9.5	33.4	44.5		9.5	56.2	45.7		9.4	55 1.9	44.8		9.5	53.7	2.9		9.1	55.2	15.2	
9.5	44.4	44.9		6.8	45 9.8	12.6	K	9.5	34.3	19.6		9.2	56.2	11.1		9.5	58.8	25.3	
8.5	57.5	39.9		9.5	13.8	14.1		9.2	40.1	0.2		9.5	3 10.9	8.4		7.9	10 9.5	1.8	L
9.5	36 8.9	0.4		9.5	49.9	40.5		9.5	47.8	49.7		9.4	16.1	41.3		8.5	12.4	58.9	
8.6	19.7	40.4		9.0	46 14.7	46.0	B	8.9	50.4	12.7		7.7	16.7	27.4	K	9.3	36.0	18.4	
8.1	28.2	2.9	K	7.5	16.2	6.9	L	9.4	56 4.0	17.6		9.5	19.0	51.9		9.5	40.9	50.3	
8.8	29.5	55.0		9.5	22.7	14.5		9.5	11.5	43.8		9.5	28.3	30.5		9.5	45.3	4.6	
9.4	34.4	20.9		8.8	24.9	40.1	B	8.6	23.6	12.7	K	9.1	31.4	39.5		9.5	47.0	59.7	
7.5	43.2	56.4	L	9.5	31.8	49.8		9.3	31.8	16.2		9.1	34.0	37.0		9.5	11 1.3	17.2	
9.2	43.3	24.5	K	9.4	32.1	40.9		8.5	44.1	46.8		9.0	34.2	1.5		9.4	1.3	37.7	
9.5	37 6.2	59.0		9.1	38.4	39.2		9.4	55.8	58.1		9.4	42.6	53.6		9.5	16.2	41.9	
9.5	6.4	37.3		9.2	51.9	14.5		9.5	56.2	15.9		9.5	43.0	15.8		8.0	37.1	43.1	
9.5	28.8	48.1		9.2	57.8	22.7		9.3	59.0	50.9		9.5	55.2	29.3		4.2	59.0	17.4	K
8.8	36.7	39.9		9.1	58.8	43.4		8.2	57 8.4	27.9	K	8.6	4 1.4	53.8		9.4	12 17.4	25.6	
9.2	48.0	55.0		8.6	47 2.1	22.2	L	9.2	9.3	58.5		8.0	14.3	39.5	K	8.7	21.2	18.9	K
9.3	51.9	32.8		9.5	5.3	42.7		8.6	22.0	24.8	K	8.3	24.0	16.8	K	8.5	13 6.3	18.5	K
9.4	38 1.1	44.8		8.5	8.8	48.1		9.0	27.2	16.2	K	9.0	26.1	43.2		9.0	8.6	50.4	
8.3	7.0	53.2	K	7.8	15.8	12.3	K	9.1	47.7	32.3		9.2	36.0	43.7		9.4	12.0	42.0	
9.5	46.7	19.4		8.6	16.0	28.6		8.4	58 10.9	54.3		9.5	48.4	39.3		9.3	13.4	31.9	B
9.5	51.3	17.6	B	8.7	44.2	11.8	K	9.3	12.1	46.1	B	9.5	55.0	53.3		9.3	21.3	29.8	
9.3	39 8.5	53.1		7.8	50.0	40.9	K	9.3	14.8	39.9	B	9.5	59.1	59.7		9.4	44.8	44.6	
9.5	22.1	52.6		9.5	48 0.7	22.5		9.4	30.4	26.6		9.2	5 3.3	6.8	K	9.5	46.3	25.1	
9.1	24.4	57.3		9.5	9.9	54.9		9.2	31.5	37.4	K	9.5	12.2	12.7		9.3	52.2	52.8	
9.0	34.0	39.3	B	9.5	11.5	26.0		9.3	36.4	35.4		9.2	24.6	39.9		8.9	14 7.2	50.1	
9.2	52.4	49.9		9.3	32.0	1.3		9.5	48.3	28.5		9.3	31.0	35.5		7.9	13.9	59.2	K
9.3	40 0.3	58.2		9.3	44.9	0.1		9.0	56.0	56.1	K	9.0	37.2	13.4		9.5	29.6	45.4	
9.5	13.7	16.1		9.0	52.1	2.4		9.4	59.7	57.2		9.5	41.5	10.8		9.5	35.1	18.7	
9.5	22.8	43.7		9.5	49 20.4	49.8		9.3	59.7	17.1		8.3	43.8	44.4		9.4	40.0	52.4	
9.1	30.2	56.8		9.5	50 1.5	57.2		7.6	59 7.2	51.2	K	9.5	55.9	47.6		9.3	15 1.3	42.7	
8.9	40.0	1.2		9.3	9.5	52.3		9.5	12.3	22.0		9.4	6 16.6	18.5		9.5	1.7	3.4	
9.3	42.0	39.7	B	9.4	32.7	27.6		9.5	16.2	10.2		9.4	19.0	45.7		9.4	3.0	15.0	
9.3	47.7	20.1		9.5	45.0	25.4		9.0	18.7	6.2	B	9.1	24.2	22.2		9.2	17.1	16.2	
8.8	41 6.5	1.3	K	9.5	51 21.0	2.9		9.3	25.5	36.1		9.4	30.3	45.2		9.5	20.0	12.9	B
9.3	15.9	4.2		9.0	23.2	18.4		9.3	28.2	50.9		8.0	41.5	49.4	K	9.4	29.5	4.3	
9.5	35.0	12.6		6.5	25.6	45.2	K	9.0	28.6	1.9		9.5	47.2	2.6		8.8	48.3	10.2	K
9.5	58.9	22.5		9.2	30.7	22.9	B	7.9	34.7	14.1	B	9.5	7 6.8	3.2	B	9.0	51.3	13.4	
9.5	42 7.4	56.3		9.0	32.4	52.9		9.2	35.9	6.7	B	7.8	15.3	44.6	K	9.2	51.8	22.5	
9.0	18.7	25.6	R	9.1	52 7.6	47.9	K	9.4	48.0	58.6		7.4	20.3	53.2	K	8.8	16 6.3	48.1	
9.2	19.6	40.0		9.4	24.4	37.1		8.3	58.2	45.5	L	8.2	30.0	19.6		9.1	7.7	28.8	
8.6	25.0	8.8	K	8.3	35.0	8.7	K	9.5	0 3.6	24.9	B	9.5	43.4	33.7		9.4	23.0	32.0	
9.5	25.1	16.7		7.6	50.6	10.4	K	9.5	5.3	58.8		9.4	57.2	2.1		9.4	41.2	58.4	
9.1	36.0	6.6	K	9.4	58.5	25.1	B	9.5	17.3	2.2		9.5	8 0.7	22.6		9.5	51.1	1.1	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ᵐ	+34°			21ᵐ	+34°			21ᵐ	+34°			21ᵐ—22ᵐ	+34°			22ᵐ	+34°	
m				m				m				m				m			
9.5	17′ 29.3	41.1		7.8	29′ 9.9	33.0	K	9.5	40′ 32.9	5.1		9.4	53′ 36.9	0.3		9.1	9′ 51.9	6.3	
9.5	57.5	38.5		7.7	14.3	10.9	L	9.3	47.5	2.0		9.3	54 1.9	16.9	B	9.0	10 7.4	36.2	
8.2	58.8	32.4		8.5	27.2	8.0		9.3	54.9	35.5		9.5	20.0	59.3		9.5	11.5	20.0	
8.1	18 14.1	24.5		9.1	30.6	15.5		9.3	41 7.6	10.0		8.3	42.0	35.9	K	9.3	25.2	46.2	
8.3	15.7	21.5		9.4	42.5	17.2		9.2	12.5	13.0		9.3	52.3	34.7	B	8.1	34.3	39.0	L
8.1	20.3	41.2		9.4	30 0.0	7.0		9.0	17.3	49.7		9.5	55 2.4	29.7		9.3	11 31.1	58.9	
8.9	22.4	49.4		8.3	6.5	21.6	B	9.2	22.1	53.0		9.5	10.0	0.9		9.5	43.6	57.7	
9.1	19 7.5	11.0		9.0	7.0	22.7	K	9.5	22.4	9.7	B	9.5	15.5	3.0		8.9	12 5.7	25.8	K
7.4	19.0	7.7	K	9.2	23.8	28.9		9.5	24.4	7.0		8.6	40.2	36.0	K	9.2	5.9	4.5	
9.4	25.6	8.3		9.5	54.1	2.4		8.3	46.9	49.4	K	9.3	49.6	55.0		9.0	23.6	34.5	
9.5	20 11.1	14.0	B	8.9	31 0.9	30.4	B	9.5	42 29.4	23.0		9.5	56 21.3	53.8		9.5	13 4.2	4.3	
9.5	18.5	23.6		9.3	10.4	30.0		9.2	38.2	50.0		9.5	22.4	3.6		9.5	19.6	52.8	
9.1	32.4	42.3		6.5	16.7	41.5		9.4	39.4	45.2		8.3	36.6	33.1	K	8.5	31.6	33.0	B
9.5	34.0	10.2		8.9	36.7	6.3		9.5	58.2	54.3		9.5	51.4	13.4		9.1	42.6	8.0	
9.5	38.8	0.3		9.5	51.8	54.1		9.4	58.7	59.7		9.4	57 39.4	15.4		9.5	53.0	28.0	
9.4	50.6	20.0		9.5	51.8	49.4		9.3	43 4.2	10.6	B	9.1	58 1.8	28.9	K	9.5	14 4.3	41.8	
8.8	53.1	10.1		9.1	32 19.0	16.5		9.5	6.4	37.3		8.5	59 23.7	39.0		7.4	4.6	24.9	K
9.4	21 10.3	3.9		9.5	36.4	24.3		9.5	21.9	13.1		9.2	27.7	13.0		9.4	14.0	16.5	
9.5	23.8	6.0		9.5	45.3	49.9	B	9.5	26.0	51.8		9.5	51.8	38.6		9.5	27.7	56.0	
9.4	44.0	6.9		9.5	50.2	54.2		7.5	36.5	14.6	L	9.2	0 9.2	44.8		9.3	33.4	53.6	B
8.9	53.2	56.7		9.4	53.5	19.7		9.5	50.5	25 2		8.0	52.9	54.8	K	9.5	52.6	21.7	
6.8	53.8	46.9	K	9.4	33 2.7	15.2		7.7	53.1	8.2	K	8.9	1 7.4	14.2		9.3	15 2.6	28.9	
9.1	22 10.1	6.9		9.5	13.8	12.5		9.4	44 6.4	23.8		9.3	11.0	53.4		8.4	4.4	10.2	K
9.3	19.3	9.1		9.4	18.2	58.5		9.3	7.0	10.2	B	9.5	36.0	5.7		8.5	21.1	59.9	
9.1	19.8	11.6		9.4	53.0	8.3		9.4	45 18.8	22.0		9.4	49.2	44.9	B	9.5	53.7	4.5	
9.5	48.2	43.4		8.9	34 1.7	2.9		9.0	22.7	40.2		9.5	2 19.6	39.2		9.2	55.2	0.7	B
9.4	50.3	18.3		9.4	4.3	41.0		8.9	28.9	44.1		9.0	23.1	52.4		9.5	16 12.2	43.5	
9.5	54.7	16.0		9.1	8.4	45.1		9.3	42.3	40.8		9.2	46.8	28.7		9.1	18.4	34.5	
9.3	23 9.6	20.9	B	9.5	13.6	5.8		9.0	55.9	53.1		9.5	52.9	17.2		9.1	33.0	17.3	B
9.5	12.9	51.9		9.4	17.7	54.7		9.5	46 16.6	55.7		7.5	3 1.6	23.8	K	8.6	49.3	16.5	K
7.8	13.8	20.4	K	9.0	54.9	6.6		8.7	18.6	30.0	B	8.0	9.3	39.7	K	9.4	17 8.8	50.0	
9.2	16.1	49.1	B	8.0	55.3	25.8		9.5	47 0.7	43.0		9.5	10.9	56.3		7.8	29.0	23.0	
9.5	29.1	0.3		6.6	55.7	0.8	K	9.5	19.6	57.0		9.3	35.2	53.8		9.5	54.1	1.2	
9.0	30.7	4.5	K	9.3	35 2.2	27.3		9.4	33.6	23.0		6.8	45.3	29.9	K	7.1	59.3	42.0	B
9.3	31.8	26.1		8.5	13.5	2.2	K	9.4	42.0	21.8		9.5	4 8.8	32.7		8.7	18 10.5	51.3	
7.0	24 5.3	50.1	L	8.5	14.2	46.9		9.0	42.2	10.8		8.8	34.3	24.8	K	9.5	20.6	29.3	
8.4	18.9	25.4	K	8.3	29.2	11.3		8.2	50.0	31.9	B	9.5	54.5	51.0	B	9.5	43.7	6.2	
9.0	25.1	2.9		9.1	30.0	42.9	B	9.5	54.5	29.1		9.5	5 20.2	39.3		8.9	53.9	27.5	
9.5	35.8	48.1		9.1	34.2	24.9		8.7	54.6	8.3	B	8.5	6 1.1	4.2	K	9.4	56.8	51.8	
9.5	40.6	7.8		6.2	54.5	51.0	K	9.4	48 0.0	26.7		8.8	17.3	17.9		9.0	19 5.4	58.4	
9.4	44.2	8.0	B	9.5	36 43.5	56.1		9.5	1.3	16.2		9.4	20.0	57.0		8.4	23.6	37.2	K
9.5	44.7	1.2		9.1	37 16.6	5.2		8.8	2.6	4.8		9.5	25.6	44.1	B	9.4	34.0	3.3	
9.5	25 5.0	46.1		9.5	16.6	16.2	B	6.8	42.7	5.7	K	9.3	26.5	29.6		9.4	40.5	50.7	B
9.5	11.9	34.2		9.5	25.0	48.0		9.0	48.3	25.9		9.3	46.5	7.8	B	8.7	48.1	57.5	
9.5	31.8	7.0		9.3	31.7	5.1		9.2	49 5.8	25.5		9.3	55.6	15.0		9.5	20 28.2	48.2	
9.0	32.3	55.8	K	9.4	32.4	46.3	B	7.0	19.9	16.5	K	9.4	57.0	11.8		8.8	33.7	40.0	K
9.3	32.3	11.3		8.5	48.6	15.1	K	7.8	22.8	23.1	K	9.5	7 7.7	19.2		9.5	42.6	53.1	
9.4	36.9	56.6		9.3	58.7	21.0		9.4	26.7	20.5		9.5	31.4	6.3	B	9.0	48.0	34.1	K
9.5	46.2	14.0		9.1	38 8.0	36.8		9.5	52.4	2.0		9.5	41.6	41.7		9.4	48.2	10.8	
9.5	52.0	10.0		9.5	11.4	13.1		9.0	50 53.8	25.1	K	9.5	54.0	12.6		8.8	21 5.0	0.8	
9.5	26 3.0	20.3		8.5	12.5	35.5	K	8.3	58.7	38.6	K	9.0	8 14.9	54.6		8.8	16.1	47.6	K
8.7	32.3	7.2		8.5	17.1	56.4	K	9.4	51 12.6	50.7	K	9.5	23.1	15.6		9.5	28.4	39.8	
9.5	47.2	34.5		9.2	35.1	25.2	B	8.2	43.3	0.4	K	9.2	53.5	5.6	B	9.5	47.7	49.2	
9.3	48.8	49.7		9.5	39 3.4	53.8		9.5	50.2	56.9		9.2	57.4	4.0		9.3	47.8	33.8	B
9.5	27 18.9	56.9		9.4	30.5	28.2		9.4	52.7	29.2		8.8	9 2.0	10.8		9 5	22 11.4	29.8	
9.3	43.8	48.3		9.2	35.1	7.0	B	9.5	55.7	4.5		9.2	2.8	6.5		9.5	23.5	36.5	
9.1	58.3	51.8		9.0	47.0	20.0		9.5	52 4.3	33.4		8.6	12.9	23.4		9.5	26.9	41.5	
9.4	28 14.0	22.1		9.5	59.3	14.5		9.3	59.4	43.5		8.1	18.8	49.3	'L	9.1	39 3	17.9	
9.4	30.1	38.4		9.5	59.3	53.9		8.9	53 0.2	36.2		9.2	23.2	4.9		9.2	23 8.9	10.3	K
9.3	31.0	24.1		9.5	40 3.5	25.2		9.0	21.3	59.3	K	9.3	34.7	50.3		6.5	14.5	59.4	K

4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
	22ᵘ		+34°		22ᵘ		+34°		22ᵘ—23ᵘ		+34°		23ᵘ		+34°		23ᵘ		+34°	
m		′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.7	23	15.1	26.0		9.5	37	53.5	53.3		9.2	55	18.9	28.4		9.4	8	26.9	37.7		9.0	23	46.1	47.3	
9.5		34.8	9.2		9.3	38	1.0	8.9		9.5		26.8	20.2		9.5		57.5	14.1		9.5	24	14.7	25.5	
9.5		36.5	3.9		9.5		19.1	41.2		9.1		31.0	0.3		6.6	9	2.9	36.6	K	9.5		22.6	55.7	
9.4		47.3	27.7		9.3		30.5	52.0		9.1		35.7	39.6		9.2		12.1	53.9		9.3		29.4	55.5	
9.5	24	24.2	57.9		9.3	39	15.4	3.2	B	9.5		53.8	48.0		9.4		14.8	29.4		9.0		34.6	36.9	
9.5		58.3	51.8		7.5		19.8	54.6	K	9.5	56	2.1	44.5		8.8		20.3	25.5		9.5		41.2	23.0	
9.1	25	4.5	24.5		9.2		21.4	1.0	B	9.3		16.3	15.6		8.3		50.1	9.9	L	7.8	25	14.5	31.7	K
9.5		29.4	44.2		9.5		49.6	24.2		9.4	57	4.3	24.0		9.4	10	4.0	55.9		6.5		17.6	10.0	K
9.5		54.7	29.8		9.0	40	3.5	18.3		9.4		19.4	29.8		9.3		11.0	1.3		9.4		35.4	44.4	B
9.3		57.2	14.9		8.3		5.6	39.8	K	9.2		45.5	13.9		9.5		14.9	47.7		9.5		43.8	49.7	
9.2	26	1.3	9.4		8.8		57.2	55.3	K	9.2		58.1	32.8	B	9.5		52.8	55.1		8.2	26	0.3	45.1	K
9.5		15.4	52.8		9.5	42	6.1	36.3		9.5	58	0.8	8.1		9.5		57.9	46.9		9.5		11.8	51.6	
9.5		17.0	8.1		8.4		48.6	44.0	K	9.3		5.0	18.3		9.5	11	3.8	20.5		9.2		31.7	25.6	
7.5		24.2	41.6	L	9.2	43	5.2	4.3		9.0		8.2	16.8		9.5		20.8	20.7		9.5	27	42.3	41.8	
9.5		25.9	7.1		7.3		35.6	18.6	K	9.5		19.8	9.2		9.5		34.7	9.6		8.8		54.4	24.2	
9.5		50.3	24.0		8.5	44	21.9	55.3	K	9.5		54.0	0.3		9.5		37.4	34.3		9.4		57.4	56.6	K
9.5		56.2	46.4		9.2		41.3	10.2		9.5		56.6	31.9		9.5		38.9	1.4		9.5	28	3.9	6.8	
9.5	27	45.8	29.7		8.2	45	23.9	47.2	K	7.3		56.9	29.2	K	9.4		48.3	32.7	B	8.8		21.6	53.9	K
9.1		55.5	57.3	K	9.4		25.1	40.5		9.5		59.7	24.0		6.4	12	26.6	0.2	K	8.8		23.6	51.2	K
9.4	28	8.1	36.8		9.2		34.3	25.2		9.5	59	14.6	13.2		9.5		27.3	43.5		9.0		53.8	18.0	
9.5		17.7	6.3		7.2		48.3	34.3	K	8.7		32.6	59.1	K	9.2	13	11.9	47.6		9.5	29	20.0	27.1	
9.5		36.8	20.5		9.5	46	0.7	30.4		9.3		54.0	37.9		9.4		45.5	50.6		8.4		25.5	14.7	B
9.5	29	0.9	18.8		9.5		4.6	45.7		9.2		57.3	42.7		9.2	14	5.5	23.4		9.2		39.6	7.7	
9.5		6.7	5.4		9.5		44.8	11.6		7.3	0	9.8	15.8	L	8.3		11.8	39.0	S	8.3		44.8	26.6	K
9.5		14.1	40.2		9.5		45.6	31.4		9.5		10.2	30.4		9.5	15	7.2	8.7		9.4		49.1	8.2	
9.0		20.3	34.4		9.4		58.7	2.7		9.4		11.0	18.8		9.5		34.5	15.1		8.0		52.9	58.7	K
9.5		27.8	22.3		9.5	47	24.2	53.4		6.5		12.4	50.9	K	8.5		50.8	7.2	K	9.5	30	36.9	19.5	
6.3		34.5	50.2	L	9.4		56.2	17.1		9.5	1	5.8	25.7		9.5		56.4	58.3		8.7		45.6	46.0	K
6.5	30	14.2	54.4	K	9.5	48	6.1	26.4		7.9		32.4	16.1	K	9.5	16	12.5	54.9		9.5		45.8	53.3	
8.5		15.9	23.6	K	8.8		21.7	39.5	K	9.5		59.2	7.0		9.4		23.7	3.3		9.0	31	2.9	47.4	
8.4		36.0	10.3		9.5		29.5	28.0		9.0	2	24.0	0.8		9.5		28.5	51.7		8.7		15.3	43.6	K
9.5		40.3	59.2		9.3		36.6	22.5		9.5		53.3	43.0		9.0		29.2	35.2		6.5		23.3	13.2	S
8.7	31	14.9	39.7	K	9.0	49	3.0	42.3		9.5	3	4.0	0.3		9.4		39.9	10.7		7.9		27.2	43.3	K
9.5		39.9	10.0		8.3		13.3	25.3	B	8.7		17.0	55.6		9.4		49.8	38.3		9.1		33.3	57.6	
9.4		43.5	14.3		9.5		13.5	45.8		9.4		17.3	52.4		9.0		50.1	8.2	K	8.5		41.9	27.0	K
9.2	32	6.2	45.5		9.4		15.7	5.5		8.4		25.9	10.9	K	7.0	17	11.5	32.1	K	9.1		56.8	46.7	
9.0		31.4	5.7		8.0		22.9	55.4	K	9.3		49.9	46.8	B	9.0		12.4	42.4		9.5	32	12.9	20.4	
9.1		39.7	1.8		9.5		43.7	57.6		9.4		52.8	2.6		9.5		40.6	58.7	B	9.5		20.8	20.8	
8.9		48.9	39.5	K	9.5	50	14.5	53.1		9.5	4	18.5	32.2		9.4		47.4	33.0		7.2		38.5	8.8	K
9.1	33	1.2	26.3	K	7.6		20.1	8.2	K	9.1		24.4	51.0		9.1		56.9	28.4		9.4		40.3	40.8	B
9.5		35.0	5.0		9.3		35.6	40.8		8.6		25.3	16.4		9.5	18	6.5	10.1		9.5		55.3	28.3	
8.5		39.9	48.8	K	8.8		41.8	29.4		9.4		53.0	8.8		9.4		15.7	40.0		8.9		56.0	41.1	B
9.2	34	0.7	26.2	K	9.2		53.9	47.1		9.5		55.0	55.2		9.5		26.9	46.2		9.5	33	21.6	17.0	
9.1		1.4	47.9		9.1		55.6	49.4		8.9	5	5.0	55.2	K	9.5		31.7	57.6		9.5		21.6	53.2	
9.2		9.6	24.8		9.5		55.7	12.1		9.5		22.3	16.1		9.5		43.7	57.6		9.5		22.3	46.7	
9.2		38.0	42.5	K	9.0	51	26.4	32.9		9.3		23.1	45.2		9.4		50.3	17.1	B	9.5	34	24.4	29.4	
9.5		51.3	43.9		7.0		38.7	30.6	K	9.0		25.1	8.7		9.0	19	0.3	8.2		9.5		30.6	54.0	
9.5	35	1.1	33.1		8.5		44.8	2.4	K	9.4		33.0	45.9		9.5	20	3.4	32.9		9.5		34.3	59.8	
9.5		4.7	54.0		9.4		57.8	37.7		8.9		45.9	56.5	K	9.3		7.1	53.9		9.5		47.7	31.1	
9.0		12.8	58.0	K	9.5	52	29.1	24.2		8.4	6	29.6	58.4	K	9.5		14.9	56.1		9.1	35	8.9	6.3	
9.5		23.0	7.5		9.4		33.9	19.7		9.2		39.4	22.9	B	9.4		17.0	36.6		9.5		28.3	16.6	
8.8		24.8	41.6	K	9.5		38.1	35.8		9.5		42.3	17.9		9.4		24.1	52.6		9.4	36	8.8	8.7	
8.3		33.6	20.8	L	9.4		47.9	37.8		8.4	7	2.4	32.9	K	9.5		43.3	52.4		9.5		29.2	1.7	
9.4		42.8	53.6	B	9.5	53	11.3	20.8		9.4		11.4	42.0		9.5		54.1	54.6		9.5		41.8	11.8	
8.6		49.8	55.4	B	9.0		23.1	8.5		7.5		35.5	13.3	K	9.5	21	28.3	42.0		9.5		45.3	51.8	
9.0	36	5.3	43.3		9.5		29.6	12.0		9.5		39.0	18.1		8.9	22	0.0	41.7		9.0	37	8.4	7.0	
8.0		24.6	34.2	K	8.1		36.4	59.9	K	8.5		52.5	9.9	K	9.4		34.8	19.6		9.2		23.8	5.9	
9.5	37	0.2	57.9		9.0	54	5.1	35.3		8.4		57.4	41.8		7.3		48.0	12.3	K	9.3	38	3.3	31.5	
9.5		32.8	34.0		9.3		40.8	29.6		9.5	8	0.9	13.8		9.0		56.1	39.0		9.5		29.8	39.1	
9.5		41.9	55.8		9.0		57.4	42.4		9.5		20.9	47.6		9.5	23	20.5	52.5		9.2		33.3	11.9	K

5001—5014				5015—5028				5029—5042				5043—5056				5057—5067			
	23ʰ	+34°			23ʰ	+34°			23ʰ	+34°			23ʰ	+34°			23ʰ	+34°	
m		′		m		′		m		′		m		′		m		′	
9.5	38′ 41.3	11.5		9.3	42′ 28.7	18.3		7.3	45′ 57.8	49.8	L	9.2	53′ 16.2	45.8		9.5	56′ 13.3	26.0	
8.9	52.1	27.0		7.4	48.4	57.8	K	9.5	46 37.8	37.4		9.1	22.5	46.8		9.5	47.3	9.8	
9.4	57.3	35.0		9.1	43 2.8	20.1		9.5	47 24.3	6.3		9.1	27.2	56.8	B	8.6	57 13.2	58.4	
9.5	39 35.3	51.5		9.5	8.7	13.2		9.5	39.5	1.7		8.5	31.8	30.5	K	8.9	15.9	6.1	
9.5	37.6	55.2	B	9.4	16.7	46.3		9.5	49 28.4	11.5		8.9	43.7	56.4	B	7.0	46.3	45.7	
9.5	42.3	59.5		8.9	56.1	47.0		9.5	36.3	21.1		9.5	54 2.8	21.5		9.5	53.3	45.0	
9.5	49.3	49.7		9.0	44 2.0	54.6	K	9.3	50 16.5	3.8		9.5	3.9	4.4		9.5	58 6.5	7.5	
9.4	54.4	27.4		9.5	27.8	16.6		9.5	23.0	22.2		9.5	29.6	51.6		9.1	22.6	18.6	B
9.5	55.3	50.7	B	9.4	38.9	33.9		8.7	27.5	31.5	B	9.5	29.8	45.2		9.4	40.5	1.0	
9.5	40 11.5	27.7		7.0	45 15.1	30.9	L	9.4	36.9	31.4	B	7.9	56.9	1.9	K	9.5	59 31.9	56.8	
9.1	20.9	2.0		8.4	25.5	8.3		6.6	57.9	11.2	L	9.2	55 7.3	28.0		8.7	41.8	2.9	K
9.5	41 38.8	46.3		8.9	32.8	27.7		9.4	51 33.9	48.8		9.5	10.9	37.3					
9.0	42 8.4	51.9		9.5	47.3	20.1		9.5	52 24.8	50.8		9.2	22.3	51.9					
9.0	17.2	48.4		7.5	52.9	13.8	K	8.5	53.2	5.6		9.2	41.8	40.9					

Zone +35°

1—20				21—40				41—60				61—80				81—100			
	0ʰ	+35°			0ʰ	+35°			0ʰ	+35°			0ʰ	+35°			0ʰ	+35°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
9.2	0 1.0	52.1		9.4	4 25.1	19.5		9.5	10 13.4	55.0		9.5	15 33.0	23.0		9.5	22 23.0	59.2	
9.4	4.6	18.4		9.0	28.2	6.4	K	9.2	18.5	39.2		9.4	34.6	28.7		9.4	23.2	50.9	
8.8	12.9	1.5	K	8.9	53.2	58.3		9.5	28.3	56.5	B	9.2	37.5	52.9		8.6	52.4	21.9	K
9.5	30.5	14.6		9.0	5 5.3	52.5		4.5	45.1	58.8	K	9.5	16 39.4	41.1		9.1	23 19.9	17.7	
9.4	44.3	9.8		9.2	23.7	56.5		9.5	54.1	31.2		9.4	17 9.1	46.0		9.3	24 10.3	53.3	
9.4	57.6	12.5		9.0	55.6	49.1	K	8.0	11 1.7	10.8	K	8.0	57.5	41.0	K	9.1	13.9	1.2	
9.3	1 1.6	7.5		7.9	6 4.6	20.9	K	9.5	40.6	19.4		8.6	58.2	58.5	L	8.9	14.6	9.6	
6.2	14.1	49.3	K	9.5	14.7	22.5		9.4	57.5	7.0		9.3	18 19.4	31.7		9.5	44.0	20.2	
9.5	49.2	4.5		9.3	48.3	35.4		8.9	59.2	47.3		7.4	23.7	1.1	K	9.4	54.5	54.5	
9.4	2 17.1	38.8		8.5	7 26.1	36.5	L	9.4	12 7.0	50.0		9.5	31.3	10.0		7.6	25 9.3	3.3	K
9.5	48.7	19.9		9.5	34.4	53.0		8.7	35.4	34.4		9.5	58.8	22.8		9.4	23.3	9.7	
9.5	54.6	38.1		9.1	8 13.9	35.8		8.5	55.7	38.1	K	9.5	59.2	29.2		9.0	35.4	49.2	
9.5	55.0	59.6		9.5	21.1	27.9		7.1	13 33.7	4.5	K	9.5	19 19.7	7.7		9.0	26 20.3	48.2	
9.4	59.1	56.5		7.8	9 10.7	40.5	K	9.5	35.8	47.2		9.5	53.9	26.4		9.5	51.4	32.7	
9.3	3 21.9	6.8		7.1	11.2	49.6	L	8.1	14 1.2	24.7	B	9.5	20 0.3	52.1		9.1	27 9.4	43.3	
9.5	29.3	35.7		8.3	12.3	19.7	K	8.3	1.3	26.9	B	9.4	15.4	35.6		9.5	16.1	4.8	
9.5	53.1	58.3		8.9	31.7	44.9	K	9.4	2.9	27.9		9.4	47.6	50.4		9.0	36.4	47.8	
8.8	58.4	6.7	K	9.5	47.0	7.1		9.2	11.0	46.6		8.9	21 58.7	16.6	K	8.3	49.3	46.8	L
9.5	4 1.4	38.2		8.5	51.8	2.2	K	9.5	33.8	27.2		9.5	58.9	17.2		8.5	59.7	26.8	
9.0	1.8	42.4		7.7	58.0	44.7	K	8.8	15 13.8	50.4		9.4	22 13.7	47.4		9.5	28 3.6	42.4	

101—160				161—220				221—280				281—340				341—400			
	0ᵘ	+35°			0ᵘ—1ᵘ	+35°			1ᵘ	+35°			1ᵘ	+35°			1ᵘ	+35°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	28 53.8	29.2		9.3	45 25.5	29.9	B	8.2	4 36.5	29.9	K	8.3	20 35.3	53.2	L	9.4	38 27.0	57.9	
9.5	29 5.9	56 6		9.3	42.8	4.0		9.4	58.1	6.7		7.4	55.6	52.6	L	9.4	30.0	40.1	
9.5	13.8	26.5		9.5	46 27.6	32.5		9.0	59.2	12.6		9.4	21 0.3	54.6		9.5	39 31.1	35.3	
9.1	18.6	21.8		9.5	49.1	40.2		9.5	5 5.5	46.3		9.2	54.8	19.9	K	9.5	44.8	1.7	
9.4	39.7	47.2		9.2	47 12.1	20.2		9.5	22.6	56.5		9.1	22 21.9	27.2	K	9.0	56.2	49.8	
9.4	41.0	24.5		9.5	12.1	38.0		9.5	44.9	40.0		9.4	23 17.7	30.2		9.4	40 10.3	37.1	
9.5	59.7	4.3		8.6	20.7	14.8	K	9.5	47.7	36.2		8.9	29.2	20.5		9.1	13.1	5.8	K
9.5	30 20.4	24.6		9.5	27.1	28.0		8.8	6 5.5	2.1		9.4	31.1	17.9		9.3	41 12.2	27.4	
8.5	54.7	4.8	K	9.5	44.5	34.8		9.5	37.8	48.0		9.2	57.7	0.3	K	7.5	42 17.6	20.4	L
7.8	55.6	47.5	K	9.1	48 18.1	50.5		9.4	47.4	58.0		9.0	59.8	38.1		7.3	25.5	7.6	K
9.4	56.4	14.2		9.3	31.9	6.3		9.5	7 3.1	5.4		9.4	24 10.7	43.7		9.2	27.8	31.8	
9.5	31 3.0	59.3		9.2	37.5	57.3		9.5	11.2	54.1		6.5	30.3	6.3	K	9.3	33.5	18.0	
7.6	47.9	59.6	K	9.5	49 27.7	39.9		9.3	20.9	41.1		9.1	31.1	7.0	K	8.7	56.0	4.1	K
9.4	32 14.0	30.0		9.4	39.9	39.3	B	9.5	21.3	4.6	B	9.5	34.3	32.5		8.7	43 22.8	20.7	K
9.4	18.8	18.9		9.5	50 4.2	57.8		9.5	40.9	50.1		9.5	53.8	51.6		9.5	44 4.0	37.9	
9.4	39.5	33.2		9.1	6.6	27.6		9.0	8 15.4	14.3	K	8.2	25 52.1	26.4	K	9.5	6.2	48.3	
7.7	42.4	39.1	K	9.5	51 36.5	9.8		8.5	25.2	40.1	L	9.4	57.0	49.3		9.5	12.4	31.7	
9.5	42.4	14.0		9.5	52 9.0	6.5		8.0	33.9	33.1	K	9.4	26 7.3	17.5		9.5	12.7	55.2	
9.5	42.6	7.4		9.2	23.0	43.9		9.5	40.9	42.9		8.5	23.5	22.6		9.5	45.4	9.7	
9.5	46.2	10.9	B	9.3	27.2	7.2		9.4	9 14.8	1.1		8.5	27 16.1	25.6	B	9.5	45 6.3	50.5	
8.2	48.3	44.0	L	7.1	53.9	52.7	B	9.5	44.0	9.3		9.5	23.3	14.5		9.5	19.9	9.3	
9.5	57.1	14.0		9.4	53 2.1	33.8		9.5	49.9	42.8		9.5	38.4	21.8		9.5	38.6	16.5	
9.0	33 16.5	25.4	K	9.3	14.9	27.2		9.5	52.6	56.0		7.8	47.6	47.6	K	9.5	39.2	23.9	
9.4	57.0	21.5		7.8	35.1	12.7	K	9.5	10 47.3	45.2		9.5	28 5.0	10.4	B	8.8	39.7	50.9	B
9.5	34 6.2	49.2		9.0	35.8	26.2	B	9.4	57.1	19.2		9.5	16.8	11.9		8.7	43.7	32.9	
9.4	27.2	27.3		8.9	54 25.4	34.7	K	9.3	11 3.9	0.7	K	9.4	44.5	23.6		9.4	55.9	43.3	
9.1	33.1	5.0		9.5	41.3	45.9		9.5	13.7	15.0		9.4	52.9	40.3		9.5	57.8	27.0	
9.4	38.7	5.3		9.5	42.4	39.5	B	9.5	39.0	22.4		8.0	29 8.8	58.9	K	9.5	46 10.0	50.0	
8.7	41.2	32.9		8.0	55 0.7	45.3	K	8.1	54.1	53.2	K	9.5	15.6	36.1		9.5	17.0	2.4	
9.5	35 27.3	50.5		9.2	7.1	25.5		9.4	12 20.0	36.8		9.5	40.4	9.2		9.5	20.2	20.5	
9.5	30.5	48.3		9.5	17.3	6.2		8.6	21.4	39.7	K	9.5	40.8	33.5		9.4	26.1	12.6	
8.8	33.0	20.6	K	9.5	29.1	26.7		9.5	13 24.5	28.5		9.2	30 15.9	16.2		8.2	45.1	17.3	B
9.4	54.9	17.4		9.3	38.2	45.0		9.5	26.4	54.8		9.5	43.3	7.5		9.5	56.2	5.2	
9.5	36 12.4	26.7		9.0	40.7	30.5	B	9.5	38.8	56.6		7.0	45.6	48.3	L	8.5	47 11.0	37.9	
9.5	28.5	58.1		9.2	47.6	44.3		9.4	58.6	18.3		8.8	50.4	52.1	L	9.5	25.3	14.1	
9.4	39.3	0.6		9.3	57.1	10.2	B	9.0	59.1	0.7	K	8.7	31 6.4	57.6	L	8.8	34.1	28.0	
9.0	48.7	48.5	K	9.5	56 12.1	15.8		9.2	14 0.0	44.2		8.8	13.8	27.2	K	8.5	39.3	20.7	
9.5	58.8	6.3		9.1	19.4	31.7		9.3	16.7	19.0	B	8.8	18.2	29.3	K	9.5	48 12.7	16.6	
9.5	37 15.9	59.8		9.3	21.0	11.9		9.0	48.9	29.1		8.8	32 16.7	28.2	K	8.8	49 4.9	5.0	K
9.1	42.4	56.9		9.5	57 35.1	42.9		6.7	15 4.1	45.4	L	8.9	35.7	0.3	K	9.2	54.7	18.8	K
9.5	38 4.0	46.0		9.5	58 21.4	20.6		9.5	19.7	35.7		9.5	49.8	45.2		7.8	58.9	32.3	L
9.4	46.6	14.4		8.3	33.1	37.7	K	9.5	21.8	16.8		9.5	33 1.0	36.1		7.0	50 12.3	54.0	L
8.6	39 19.4	51.9		9.0	59 4.6	56.8	K	9.5	16 4.1	34.5		9.1	13.9	22.9		9.5	19.9	29.5	
9.3	55.7	8.9		9.2	5.9	27.2		9.2	26.5	27.7		8.2	14.4	49.1	K	9.5	37.8	48.7	
7.4	40 7.7	41.8	B	9.4	26.1	49.0		8.0	28.2	19.1	L	8.6	17.9	50.5	K	8.3	51 44.7	34.7	K
7.4	8.0	24.7	K	9.3	49.6	34.1		8.9	38.1	25.8		9.5	35.0	28.0		8.7	58.5	5.1	K
9.5	50.5	16.3		8.8	56.7	2.3		9.5	38.2	43.7		9.5	34 2.8	36.8		9.3	52 25.2	43.3	
9.5	53.1	23.7		9.4	0 23.4	27.9		9.1	17 7.0	5.0	K	9.2	5.7	13.5		9.5	53 3.5	31.7	
9.4	41 8.7	8.4		8.9	26.1	19.3		8.7	9.6	12.9	K	9.5	16.5	50.7		9.5	3.5	38.7	
9.5	13.9	50.9		9.5	46.9	9.4		7.7	28.3	36.0	K	9.4	22.3	17.7		9.5	12.4	43.9	
8.5	42 2.2	18.6	B	9.5	1 13.6	57.3		9.5	45.9	54.1		8.6	53.0	4.1	K	9.4	17.6	29.0	
8.3	23.7	0.4	K	9.5	20.1	25.1		9.5	18 0.1	34.9		9.5	35 2.7	10.6		9.4	18.0	47.7	
9.4	33.5	57.6		8.5	27.6	47.0		9.5	33.9	57.0		9.5	34.2	29.7		9.4	21.5	35.5	B
8.9	43 23.9	3.6	K	8.9	2 22.2	40.3	K	8.6	34.3	48.6	K	9.5	45.7	45.0		9.5	31.3	9.6	
9.5	33.8	23.0		8.8	29.2	9.7		9.2	19 26.8	7.0		9.5	36 0.9	11.7		9.5	43.2	26.3	
9.4	57.9	24.7		9.0	34.9	18.4		9.1	55.7	25.3		9.5	11.5	43.0		8.0	54 35.1	25.0	K
9.0	44 9.2	36.0	K	9.4	55.0	51.2		9.2	59.4	11.2		9.5	52.6	58.9		9.3	57.7	49.0	
9.1	32.7	13.7	K	8.2	3 10.3	9.2	K	9.2	20 11.1	17.5		8.3	37 30.0	26.9	K	9.5	55 50.5	46.9	
9.4	45 9.6	38.7		7.8	38.1	38.2	B	9.5	21.3	6.5		8.5	34.7	36.3	L	8.8	56 27.1	54.2	K
9.3	23.5	33.9		9.4	4 21.4	12.5		9.0	34.9	1.8		9.4	38 15.1	4.2		9.0	27.3	53.1	B

401—460				461—520				521—580				581—640				641—700			
	1ᵘ—2ᵘ	+35°			2ᵘ	+35°			2ᵘ	+35°			2ᵘ—3ᵘ	+35°			3ᵘ	+35°	
m				m				m				m				m			
9.4	56′ 32.8	59.5		9.3	13′ 24.0	10.1		8.6	29′ 38.3	44.2	K	8.4	43′ 42.4	41.1		9.5	2′ 27.5	56.9	B
9.4	42.1	42.2		9.3	31.6	28.6		9.0	40.4	22.1		8.2	45.3	52.2	B	9.5	33.7	58.4	
9.4	57 16.6	38.2	B	9.3	43.5	41.7		7.9	45.8	40.5	K	8.2	59.8	2.8	B	8.6	45.1	31.8	
9.5	23.6	9.4		9.3	14 29.0	35.9		9.2	51.6	59.3	K	9.5	44 44.4	2.4		9.4	3 29.5	7.5	
9.5	36.2	56.0		8.4	46.1	10.2	K	9.5	30 5.9	59.7		9.2	49.7	8.3	K	9.3	4 1.1	20.4	
9.5	58 29.8	5.3		9.5	15 46.9	45.9		9.0	9.8	11.4		8.5	45 6.8	27.2	K	9.3	22.4	48.3	B
9.3	58.3	5.1		8.9	47.2	38.8		9.1	16.1	8.8		8.5	46 2.0	59.7	K	7.9	37.1	36.2	K
9.5	59.6	37.5		9.5	57.9	49.5		9.5	28.4	35.9		8.3	30.1	19.0	L	9.5	5 13.4	30.0	
9.4	59 49.4	51.4		9.5	16 34.3	52.7		9.0	31 5.0	56.0	K	9.0	44.4	48.5		9.1	14.4	55.6	
9.3	58.7	58.3		8.3	37.9	18.7	K	9.1	12.4	26.9	K	9.4	59.4	16.9		9.5	26.7	21.0	
9.4	0 41.7	55.0		9.3	38.9	47.9	B	8.1	39.1	23.8	K	9.0	47 2.3	44.3		8.3	53.4	10.7	K
9.4	1 25.6	6.3		9.5	17 55.0	54.5	B	9.5	51.1	32.5		9.1	5.4	57.4		9.5	59.3	59.7	
9.3	29.3	4.3	B	9.1	18 35.6	41.1		9.4	52.0	49.4		9.4	43.4	34.2		7.0	6 6.6	55.7	L
9.2	40.7	57.5		9.4	48.0	41.9		9.5	54.7	15.9		9.2	45.8	41.1		9.4	36.7	1.0	
9.5	2 0.4	48.9		9.2	19 4.9	54.2		9.1	32 29.3	52.6		9.0	48 13.0	34.2	B	9.5	7 6.3	20.0	
8.3	18.1	20.4	K	9.0	15.1	20.5		9.1	42.3	12.4	K	8.0	37.3	10.2	K	8.8	7.8	14.1	K
9.4	30.4	37.3		8.5	18.4	16.9		9.2	43.4	3.1		9.2	58.6	35.1		9.5	35.7	33.1	
8.9	54.2	3.5	K	9.5	49.9	39.2		9.5	49.1	30.0		9.4	49 10.6	29.0		9.2	37.1	49.8	
9.3	55.3	27.8		9.3	58.0	18.5		9.4	53.0	8.8		9.5	51.1	12.8		9.0	51.1	24.9	
9.4	3 5.0	24.5		8.9	20 8.3	0.4	K	9.5	56.1	46.0		9.5	50 3.3	9.8		7.0	8 10.6	49.8	K
9.5	47.2	47.8	B	9.5	13.3	56.2	B	9.2	33 21.6	19.0	B	9.3	54.2	29.6		9.5	46.7	42.5	
9.5	4 20.7	17.4		9.3	19.3	59.9	B	9.1	26.9	23.0		8.0	51 18.1	48.5	B	9.5	9 27.0	24.5	
9.5	23.0	25.0		9.4	21.6	13.8		9.5	35.0	59.4		9.1	29.8	6.0	B	8.0	29.2	0.6	K
9.5	48.5	7.1		9.5	36.4	59.6		8.3	34 17.0	20.4	B	8.6	35.9	5.7	K	9.5	45.0	36.3	
9.5	5 32.8	56.7		9.4	42.7	5.7		9.0	35 10.1	15.8		8.3	57.1	26.6		9.3	10 4.3	27.0	
9.3	6 6.1	20.0		9.5	21 6.0	26.6		9.1	18.8	37.6		8.3	52 4.7	37.0	K	9.5	14.9	47.6	B
9.3	6.7	50.4		9.5	22.4	40.1	B	9.2	46.3	14.5	K	7.0	11.8	33.5	K	9.5	47.4	10.0	
9.2	12.5	4.2		9.0	37.1	21.9		9.0	36 26.8	42.4	K	9.4	38.4	47.9		8.8	58.1	38.2	K
8.9	40.3	49.6		9.2	43.9	2.3		9.2	37 9.1	28.3		9.2	48.5	52.9		8.8	12 1.0	44.9	
9.3	44.0	13.2		7.5	58.4	28.0	K	7.9	13.1	39.4	K	9.0	53 6.5	0.9	K	9.0	6.8	8.5	K
8.8	58.4	57.2	L	9.3	22 8.5	36.8	K	9.5	24.8	42.5		9.4	9.7	53.2		9.5	14.0	8.9	
9.3	7 10.6	36.9		9.0	10.3	4.6	K	9.5	53.1	57.5		9.4	50.1	12.1		9.3	30.7	39.4	
9.5	30.6	18.7		9.3	16.6	0.9	B	6.8	38 2.4	22.8	K	9.4	58.6	58.7		8.8	43.4	7.1	
9.1	33.7	38.4		8.8	21.4	6.6	B	8.0	13.0	57.1	B	9.5	54 16.8	15.7		8.5	51.8	14.4	K
9.2	40.1	12.5		9.4	25.0	46.0		9.3	18.8	30.7		9.2	22.1	52.1	B	9.5	13 52.5	52.8	
9.4	43.0	47.8		9.4	23 1.1	21.4		9.4	22.3	5.5		7.1	28.5	52.2	B	8.5	14 1.1	13.8	K
9.5	45.3	43.8		8.6	16.3	31.1	K	9.5	43.1	33.8		9.5	55 13.3	5.8		9.0	7.7	48.7	
9.5	48.6	26.2	B	8.0	25.6	5.0	K	9.2	56.7	12.0	K	8.3	16.9	1.1	K	9.4	28.1	35.4	
9.5	54.3	42.8		8.8	52.1	52.9	K	9.5	39 6.6	34.2		9.5	37.3	34.2	B	9.4	35.2	58.0	
8.6	8 2.8	1.5	K	9.0	24 19.8	16.2		9.5	17.2	5.8		9.5	56 31.3	13.5		9.4	53.3	30.0	B
8.5	6.0	33.9		8.9	21.6	2.1	K	9.4	20.4	51.8		9.5	35.0	32.2	B	8.0	58.4	12.7	L
9.2	15.3	3.0	K	9.2	25 14.6	57.2	K	9.4	21.0	3.3	B	9.2	57 11.9	52.0		9.4	16 8.6	29.0	B
7.5	22.5	15.3	K	9.3	34.0	1.1	B	9.1	22.4	43.4		8.6	58 17.4	6.8	B	8.6	10.8	29.9	K
9.5	30.0	19.9		9.4	53.8	35.9		8.5	41.0	36.9	K	9.5	19.0	1.3		9.5	12.4	21.8	B
9.3	37.6	39.1		9.0	26 15.9	14.6	B	9.3	40 0.7	28.3		9.5	41.3	58.9		8.5	40.2	50.5	
9.5	55.5	49.4		9.5	36.9	50.5		9.3	1.5	59.0		9.5	49.3	15.1		9.2	55.4	55.9	
8.2	57.1	43.8	K	9.5	48.4	34.2		7.7	14.0	15.9	B	9.5	51.4	16.8	B	9.3	17 6.7	42.9	
9.3	9 9.2	15.6		9.5	27 12.5	54.7		9.3	46.1	38.3		8.2	53.3	23.2	B	9.5	11.5	0.2	
9.0	28.1	54.4	K	9.3	14.8	15.2		9.4	41 29.2	13.1	B	9.4	55.4	4.3		8.5	28.8	46.7	
9.4	30.8	45.6		9.5	19.1	44.2		9.5	30.8	2.6	B	8.3	59 33.1	39.4		9.5	46.7	7.5	
9.5	10 12.9	28.1		9.5	32.6	0.3		8.5	32.1	43.1	K	9.3	47.0	57.2		9.2	18 7.7	52.4	B
9.4	36.8	11.2		8.8	41.5	27.7	B	9.5	33.1	7.6	B	9.4	0 24.3	7.9	B	9.4	15.6	48.8	B
9.5	54.4	24.5		9.3	55.7	31.7		9.3	50.2	21.9	B	9.5	24.8	2.4		9.1	48.6	27.9	B
8.8	11 20.5	17.7	K	9.2	28 20.8	32.4		9.5	42 2.8	54.2		9.5	1 7.9	3.9		9.5	19 14.9	57.8	
9.5	23.4	9.3	B	8.9	22.1	28.6	K	9.4	10.5	32.9		9.0	20.4	53.5		9.5	24.8	38.8	B
9.5	32.6	52.3		9.2	25.4	2.8	K	8.0	18.7	41.9	K	9.2	20 9	33.3	B	8.6	25.1	35.5	K
9.5	53.7	53.5		9.3	32.3	10.2	B	9.4	28.8	36.6	B	9.5	22.9	39.6		7.5	36.1	17.7	L
9.5	12 20.2	53.0		9.5	39.1	12.2		9.5	41.1	31.4		9.3	34.3	57.5	B	8.8	37.8	11.3	K
8.9	28.9	23.0		9.5	53.0	19.0		9.2	49.6	52.5		9.4	2 16.5	24.3	B	8.8	41.1	41.7	K
9.3	59.3	5.8		9.2	29 28.5	47.0	B	9.5	43 16.2	42.2		9.1	26.1	38.7		9.5	48.3	5.4	B

701—760				761—820				821—880				881—940				941—1000			
	3ᵘ		+35°		3ᵘ—4ᵘ	+35°			4ᵘ	+35°			4ᵘ	+35°			4ᵘ—5ᵘ	+35°	
m	′	″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	20	5.2	10.3	B	9.0	43 51.3	54.0	B	9.3	3 2.5	22.1		9.5	23 9.5	14.5		8.9	50 4.0	19.9	B
9.5		50.8	26.6		8.5	44 0.7	58.5	K	9.1	55.6	59.3		8.5	28.9	30.6	K	9.5	7.0	19.5	
8.2		56.9	43.5	B	8.3	1.5	6.2	L	8.0	56.9	6.5	K	9.4	24 35.2	0.0	B	9.5	11.1	45.2	
9.5	21	7.6	26.0		8.4	1.7	21.8		9.5	59.9	55.0		9.1	25 52.1	2.1	B	9.2	22.0	40.5	
9.3		8.4	16.6		9.5	24.9	13.3		9.5	4 12.5	47.4		7.5	26 12.3	21.8	K	9.5	42.4	34.6	
8.6		12.1	43.5		9.4	45 14.2	50.9		9.1	38.9	27.7		9.4	36.0	26.0		9.4	42.8	27.6	
9.4		29.9	11.7		9.5	37.0	58.8		9.0	39.4	47.3	K	9.1	43.5	59.1	B	9.5	53.9	59.7	
7.5	22	31.1	58.8	L	9.5	51.4	3.9		9.0	5 33.6	32.8	B	9.4	44.7	46.0		9.2	51 7.3	0.7	
9.5		38.7	4.5		9.3	46 31.4	48.8		9.5	34.1	27.0		9.5	27 3.6	8.2		8.6	17.8	12.1	K
9.3		41.4	46.7		9.5	58.2	43.4	B	9.4	49.4	3.5		9.5	53.4	5.8		9.3	28.5	12.6	
8.9		51.5	43.7	B	8.0	47 17.9	34.3	K	9.5	58.5	57.6		9.5	29 2.5	24.9		8.9	49.0	44.2	
9.3		58.8	38.3		8.6	48 14.4	33.1		8.0	6 59.3	44.0		9.4	22.9	18.7		9.5	56.6	55.5	
9.0	23	21.4	13.8		8.9	49 21.8	56.8		8.8	7 1.6	51.4		7.0	49.3	39.7	B	8.5	52 27.0	42.8	K
7.5		25.9	9.9	L	9.3	33.0	57.2		8.4	10.0	50.7	L	9.3	30 15.2	57.4		9.3	53 22.9	54.6	
9.5		53.3	25.9		4.2	33.8	22.8	K	9.5	29.2	45.7		8.2	22.0	59.2	K	9.4	39.5	21.0	
9.5	24	16.8	16.6		9.3	46.0	24.7		9.3	37.0	31.5	B	9.2	32 15.5	34.0		9.3	43.8	13.6	
8.5		49.9	34.9	K	9.5	56.5	27.5		9.5	8 0.1	55.1		7.5	47.3	33.9	K	9.5	56.4	22.8	
9.5	25	15.5	30.4		8.0	50 2.4	54.2	L	9.5	12.2	22.9		9.4	33 6.0	22.1		9.4	54 11.2	5.0	
9.0		23.0	2.3		8.5	27.9	35.3	K	9.1	17.5	46.0	K	9.3	18.6	51.3	B	9.5	11.9	55.8	
9.1		53.5	38.4		9.0	31.6	36.1	K	7.3	59.7	38.1	L	8.0	34 36.4	54.7	K	9.5	19.4	52.0	
9.5	26	1.4	5.1		9.0	39.0	20.8	K	9.2	9 20.5	27.0		9.5	37.8	57.0		8.7	25.0	33.7	
9.5		15.8	55.3		9.3	50.9	36.0		9.5	21.4	0.1		9.5	55.5	21.5		9.4	35.2	38.3	
8.5		29.8	0.5	K	9.1	54.4	47.2	L	9.0	48.2	18.6	K	9.0	35 19.3	20.4		9.5	40.3	34.0	
9.5		43.4	7.3		9.4	51 12.0	28.0	B	9.5	10 23.4	6.6		8.5	55.5	28.0	K	8.9	40.9	41.5	
9.5	27	36.2	58.5		9.0	25.3	53.2	K	9.1	26.6	6.0	B	9.3	37 12.0	45.5	B	9.4	50.5	27.7	
9.2	28	49.0	40.0		9.2	37.7	39.2	B	9.5	28.0	50.8		9.3	35.6	33.9		8.9	55 13.4	17.6	
9.3		53.0	42.0	B	9.5	52 5.2	52.8		9.2	43.9	3.0		8.3	38 57.3	22.3	B	9.1	19.1	10.6	
9.3	29	8.6	46.2		9.5	30.5	10.4		9.4	11 0.7	3.9		9.5	39 11.0	32.0		9.2	37.7	2.5	
9.3	30	13.9	58.8	K	9.5	53 8.2	47.5		8.0	14.2	27.0	K	9.3	50.1	53.0		9.5	41.2	30.3	
9.0		14.9	20.2	B	9.5	54 18.0	8.2	B	9.2	42.1	44.5		9.5	41 2.2	6.5		9.3	56 4.6	19.0	
9.5		58.4	22.9		9.5	23.0	46.7		9.3	12 48.4	17.4		9.2	21.6	54.0		8.9	5.8	28.1	
9.5	31	2.8	48.2	B	9.5	23.5	28.7		9.3	53.5	46.0		9.5	26.4	59.5		7.8	8.1	38.7	K
9.3		20.5	5.9	B	9.1	51.8	25.2	K	9.3	54.1	22.9	B	9.5	46.8	2.8		6.5	19.7	44.1	K
7.5		20.8	29.0	K	9.4	55 1.3	0.3	B	9.5	57.8	41.5		7.0	52.8	34.1	K	9.0	26.3	48.0	
9.4		37.7	47.0		9.5	4.9	5.3		9.5	58.2	3.6		9.5	42 7.1	0.9		9.4	44.7	31.8	
7.3	32	3.0	55.0	K	7.3	7.5	31.1	K	9.3	13 32.0	52.8		8.0	29.3	57.6	K	7.9	50.9	21.9	L
9.1		18.2	16.1	B	9.5	56 27.9	2.8		8.2	36.0	8.5	K	8.3	43 18.3	33.3	B	8.1	52.6	18.5	L
8.8	33	11.7	9.7	K	9.5	57 18.4	0.7		7.3	39.3	41.6	L	8.8	20.9	21.7		9.2	55.4	5.6	
8.4		11.7	2.8	K	9.3	25.5	38.3	B	9.5	49.9	51.8		9.5	35.0	24.2		9.4	57.9	18.3	
9.0		31.8	29.4		8.3	37.9	56.3	K	6.5	14 3.5	33.0	K	9.5	47.2	20.0		9.1	57 10.8	25.7	B
9.0	34	5.5	22.4		9.5	59.6	2.5		9.3	11.1	22.5		9.5	44 17.3	54.5		9.0	30.9	33.3	
9.3		43.1	38.1		9.1	58 15.5	18.4		9.5	24.2	14.1		9.0	30.9	33.6		9.4	36.9	29.0	
8.8	35	1.5	33.5		9.4	28 8	3.7		9.5	15 48.1	9.8		9.3	47.1	24.4		9.5	47.7	40.7	
7.5		15.7	23.7	K	9.1	49.5	9.7		9.4	16 14.9	34.6		9.5	55.6	5.6		9.4	48.3	2.9	
9.5	37	25.2	52.2		9.1	53.2	34.8		8.4	21.5	43.2		8.6	57.5	57.5		9.5	58 2.0	30.0	
9.0	39	0.0	15.2	K	8.5	59 27.4	20.0	K	9.5	40.0	56.3		9.4	45 12.2	49.9		8.6	8.1	2.9	K
9.5		20.0	9.7		7.0	54.4	39.3	K	8.4	40.2	25.2	K	9.2	32.4	19.8		8.8	23.4	56.5	K
9.0		38.8	55.8	K	9.3	55.9	34.2		9.5	55.4	3.3		9.1	56.1	9.5	K	9.5	26.6	7.6	
9.2		55.6	7.1		7.6	0 14.2	34.6	K	9.5	17 25.5	21.8		9.5	46 12.2	44.8	B	9.5	27.6	0.9	
9.3	40	20.2	20.7		8.9	52.7	55.1		9.4	39.9	3.0	B	6.5	39.7	55.9	K	9.2	32.2	43.9	
9.1		28.0	9.2		9.2	53.5	41.5		9.4	56.0	18.3		9.5	56.4	22.7		9.1	35.5	57.2	K
8.9		33.5	53.8		9.5	1 13.2	22.5		9.4	18 52.2	8.3		9.1	47 2.4	53.3	K	8.9	59 6.3	52.3	K
9.3		47.9	7.3		9.3	16.1	43.2		9.0	19 30.0	8.7		9.4	13.3	11.3		9.4	22.5	6.6	
8.4	42	4.8	6.5	K	9.2	26.9	45.7	B	9.5	20 0.5	42.5		9.5	44.3	49.8		9.4	0 0.7	35.5	
8.7		25.5	15.5	K	9.5	27.2	12.0		8.2	53.1	47.9	K	9.5	56.6	23.9		8.5	6.8	2.9	K
9.3	43	0.8	46.3		8.3	38.7	31.5	K	9.0	21 13.6	13.8		8.9	48 7.9	30.8		9.4	6.9	20.4	
9.4		18.8	21.5		9.3	46.9	3.5		8.0	25.5	16.9	K	9.5	27.1	42.0		9.5	7.3	39.9	
9.3		30.6	0.6		9.5	2 23.3	34.3		9.5	22 13.2	24.2		9.5	37.4	4.1		9.2	26.0	52.1	
9.4		33.7	6.1	B	9.3	47.5	34.7	B	8.4	55.0	54.9		9.5	49 5.5	47.4		9.4	38.4	2.9	
9.4		43.5	9.8		9.3	48.9	54.8		9.3	23 0.3	36.9	B	9.4	46.0	11.0		9.5	46.9	29.8	

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
m	5ʰ ′ ″	+35° ′		m	5ʰ ′ ″	+35° ′		m	5ʰ ′ ″	+35° ′		m	5ʰ ′ ″	+35° ′		m	5ʰ ′ ″	+35° ′	
8.6	1 0.2	45.1		9.4	10 45.1	57.8		9.4	18 51.6	53.5		9.1	26 42.2	47.3		9.0	38 31.2	53.9	
9.5	12.4	6.8		9.5	50.2	9.4		9.4	53.6	40.7		9.4	42.5	59.8		9.2	38.3	11.8	
7.6	31.5	10.3	K	9.0	58.4	4.9		9.5	54.0	48.4		9.1	27 7.5	9.8		9.5	49.6	17.5	
7.2	52.2	46.1	K	9.4	11 13.4	57.2		9.5	55.9	51.2		9.3	12.6	13.5		9.3	56.5	8.6	K
9.4	2 0.5	10.7		9.2	14.1	40.2		9.4	19 0.9	42.3		9.3	16.9	59.1		9.5	39 3.4	55.0	
9.2	4.3	3.0		9.2	16.2	47.4		9.5	7.0	47.3		9.5	34.3	50.8		9.5	17.8	33.2	
9.5	9.9	26.0		9.4	19.8	2.5		9.5	8.1	39.4		9.3	28 10.2	53.0		9.4	32.4	12.5	
9.5	17.2	33.4		9.5	27.8	25.1		9.5	14.2	37.7		7.0	15.4	30.3	K	8.2	39.9	55.5	K
8.7	3 30.5	9.8		9.4	36.7	20.5		9.2	15.8	37.8		9.4	26.7	19.7		9.5	41.7	22.4	
9.5	33.4	45.4		9.5	39.3	51.8		9.5	23.9	44.3		9.0	28.6	53.0		9.3	59.3	48.9	
9.4	38.7	18.4		9.5	47.3	48.1		9.4	25.0	44.0		8.2	39.8	52.1	L	9.5	40 4.0	49.3	
8.0	50.9	28.3		9.0	50.5	9.3		9.5	29.9	28.3		9.3	45.3	47.5		9.3	5.8	25.2	
9.5	52.2	16.0		9.4	51.1	15.5		8.5	39.7	45.8		9.5	54.9	32.1		9.5	24.3	25.9	
8.5	54.9	31.3		9.5	12 7.4	54.1		9.4	47.6	54.3		9.5	29 24.8	22.7		9.4	24.8	1.7	
9.4	4 1.6	15.2		9.2	7.9	29.3		9.5	52.4	8.6		8.1	37.0	32.8	K	9.1	34.5	12.7	
9.5	5.8	23.2		8.8	17.9	32.1	K	9.3	56.1	34.3		7.8	30 5.0	34.1	K	9.5	41.6	31.1	
9.5	6.8	23.6		9.1	20.2	29.3		6.6	20 1.6	15.3	L	7.5	19.3	55.2	K	9.2	41 44.4	2.9	
9.1	26.9	30.3		9.5	29.5	8.3		9.5	5.4	5.6		9.5	42.6	12.6		9.2	57.7	20.2	
9.5	27.5	50.8		9.4	51.3	0.5		8.6	13.9	49.8	K	9.4	51.2	45.7		9.2	42 5.4	12.3	
9.2	35.0	37.5		9.5	53.8	24.5		9.1	16.8	34.7		9.4	57.1	39.5		9.2	39.1	0.8	
8.7	59.7	56.8		8.5	13 18.9	31.8	K	9.1	18.4	4.7	K	9.5	31 15.0	46.2		9.4	50.2	45.4	
8.2	5 20.3	11.1	K	9.4	26.6	15.8		9.3	30.2	43.2		9.5	22.3	0.5		9.2	56.8	25.9	
9.5	6 18.0	26.1		8.6	27.0	34.1	K	8.7	30.2	18.0	K	9.1	24.7	18.1		9.5	43 2.3	59.5	
9.2	18.4	54.8		9.5	14 5.6	16.1		9.4	47.5	22.3		9.5	30.4	53.8		9.5	27.3	1.9	
9.5	19.3	39.7		9.5	13.0	35.9		9.5	48.4	7.4		9.5	39.5	30.3		9.5	30.9	54.0	
8.8	40.6	13.5	K	9.3	22.7	22.8		9.2	56.0	26.6		9.5	40.2	22.4		9.4	38.8	24.1	
8.3	42.5	9.5	K	9.5	32.4	3.9		9.5	21 6.7	17.8		6.8	32 14.0	32.7	L	9.2	53.7	19.2	
7.2	46.4	54.6	L	9.2	44.7	17.8		9.5	23.5	10.3		8.9	58.4	6.3	K	8.8	44 7.7	20.5	
9.4	48.6	8.6		9.1	56.8	26.9		9.5	55.4	31.3		9.5	33 8.5	25.0		9.5	11.2	46.9	
9.5	7 0.3	2.2		9.4	58.3	51.4		9.5	56.5	8.9		8.5	9.7	18.3	L	8.4	11.6	16.8	
8.9	26.5	9.4	K	8.7	15 10.2	42.8		8.0	22 0.1	22.7	K	9.3	27.9	56.3		8.3	39.5	36.8	
9.1	27.8	25.9		9.5	12.7	18.3		9.5	12.0	37.0		8.7	29.5	9.1	K	9.5	59.0	7.0	
9.0	44.3	2.2	K	8.7	41.6	17.1	K	9.5	12.1	19.5		9.5	29.5	59.2		8.0	45 3.1	1.9	K
9.5	46.3	48.6		8.8	51.8	24.8		9.5	17.6	22.3		9.3	30.6	49.7		9.5	3.2	43.2	
9.5	51.1	40.0		8.3	16 2.9	30.5		9.5	22.0	8.1		9.1	47.2	42.5		9.4	5.2	47.2	
9.5	8 2.8	25.4		9.2	18.6	14.2		8.5	25.4	53.1		9.5	34 21.5	28.0		9.5	17.8	27.2	
9.5	3.6	14.3		9.5	20.5	24.8		9.4	30.3	0.0		9.5	28.1	39.5		9.1	34.9	53.1	
8.1	14.4	2.1	K	9.4	26.0	35.2		8.2	34.9	31.1	K	8.5	29.9	28.4		9.5	36.3	52.1	
9.2	28.9	6.6	K	9.4	41.6	15.8		8.7	43.8	25.4	K	9.5	54.3	5.7		9.3	41.4	57.3	
9.4	30.9	27.6		9.0	57.4	15.5		9.4	54.2	5.4		9.4	56.4	52.6		9.5	46 0.0	56.8	
9.4	9 5.7	20.6		9.5	17 3.2	43.9		9.4	23 0.0	27.2		9.5	35 4.2	7.8		9.5	13.6	15.6	
9.5	6.8	23.6		6.5	12.7	20.0	K	9.5	8.6	15.3		9.5	20.1	22.3		9.1	14.4	55.1	
9.0	8.5	8.0	K	9.5	35.9	30.8		9.5	18.3	31.6		8.4	25.4	5.7	K	8.5	19.5	8.4	K
8.2	14.8	42.3		9.4	47.4	7.8		9.5	47.9	48.3		8.4	26.4	3.2	K	7.9	27.0	12.4	K
9.5	23.3	24.3		9.5	50.2	47.3		9.3	24 15.2	45.0		8.7	33.1	37.5	K	8.4	50.4	3.0	
8.9	28.1	37.9		9.3	53.7	58.9		9.4	21.7	27.7		8.8	40.5	32.8		9.5	56.5	10.4	
9.5	28.2	42.7		9.4	57.4	29.5		9.5	26.0	36.0		8.7	36 7.4	53.5		8.6	47 6.6	42.3	
9.2	52.4	0.4		9.4	18 3.9	55.6		9.5	36.3	57.7		9.2	19.0	35.0		7.3	11.0	32.6	K
8.9	52.8	25.7		9.5	4.1	34.8		8.4	38.2	42.4	K	9.0	41.4	31.5	K	9.4	12.3	57.4	
9.5	10 1.5	54.8		9.4	11.0	54.6		8.0	44.7	18.5	L	9.3	49.9	30.1		8.2	34.8	59.6	
9.5	4.8	23.2		9.5	26.1	39.2		9.5	47.2	30.1		9.5	37 6.2	44.9		9.5	40.6	14.5	
9.3	9.0	36.8		9.5	27.4	47.6		9.5	25 3.6	34.4		9.5	36.8	40.5		7.9	44.9	44.7	K
9.5	18.4	5.4		9.0	27.9	21.9		9.5	9.7	17.8		8.8	58.9	29.6		9.5	46.2	57.5	
7.5	26.0	37.5	L	9.4	29.5	8.8		8.7	54.1	41.5		9.5	38 1.6	54.5		9.5	50.9	31.6	
9.5	27.4	6.6		9.4	31.7	17.9		9.3	55.3	2.7		8.6	2.4	3.9	K	9.5	54.5	43.7	
9.5	33.3	52.0		9.5	33.5	8.8		9.5	26 5.0	9.6		9.5	7.6	17.5		9.4	48 2.3	0.5	
8.8	34.6	36.8		9.5	36.8	40.3		9.4	7.4	7.6		9.2	11.8	50.9		9.5	18.4	25.2	
9.5	40.8	25.4		9.4	40.1	14.8		9.1	10.3	21.4		8.9	12.0	8.3		9.4	29.6	51.9	
9.1	42.6	13.4		9.1	49.3	19.7		8.7	12.7	24.0	K	6.5	14.4	5.8	K	9.5	32.8	22.6	
9.2	43.3	50.4		9.5	51.2	45.1		8.9	18.4	56.5		9.3	16.5	50.3		9.5	48.9	30.1	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	5ᵃ—6ᵃ	+35°			6ᵃ	+35°			6ᵃ	+35°			6ᵃ	+35°			6ᵃ—7ᵃ	+35°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	50′ 1.5	19.8		9.3	3′ 14.5	26.0		9.3	19′ 36.0	8.8		9.4	35′ 2.1	44.8		9.5	53′ 38.3	9.8	
8.9	25.2	42.5		8.2	15.6	22.5	K	9.0	42.4	17.1	K	9.5	28.6	11.5		9.4	54 38.6	21.9	
9.5	45.9	54.3		9.5	39.8	45.3		8.6	47.3	26.8	K	9.5	38.6	7.9		9.4	52.5	34.8	
7.3	46.6	17.8	K	9.5	51.0	13.5		8.6	55.0	45.3		8.3	38.8	41.3	K	9.0	55 0.6	47.7	K
9 5	57.8	23.2		9.5	5 6.3	33.9		9.4	20 4.6	19.1		9.3	36 23.2	11.2	B	8.1	5.7	44.7	K
9.5	51 17.3	48.1		8.9	11.6	16.0		8.9	9.9	55.9		9.3	30.9	15.3		9.3	46.1	7.4	
9.5	20.4	53.8		9.5	13.8	41.4		8.6	14.3	42.3		8.7	40.3	11.3	B	9.3	56.7	24.6	B
8.3	23.6	14.5	K	9.5	23.8	22.0		9.5	38.8	5.6		9.0	58.1	16.8		9.3	56 4.0	39.9	
9.1	30.1	15.2	K	9.5	30.4	40.4		9.5	39.5	59.5		8.2	37 9.2	7.9	K	9.5	11.1	22.6	
9.4	40.0	35.0		8.8	41.2	2.2		9.5	21 27.6	45.8		9.3	21.2	35.8		9.2	25.4	42.3	B
8.7	47.5	11.8	K	9.1	6 13.1	34.1		9.5	42.0	40.8		8.0	38 35.6	24.4	K	9.5	28.2	0.8	
9.2	53.4	5.1	K	9.5	34.0	1.6		9.5	52.5	13.3		9.0	59.5	23.4		8.8	57 4.6	53.2	
9.0	52 10.2	43.4		9.3	44.6	44.8		8.9	22 1.6	27.4		9.5	39 53.0	19.4		9.4	28.5	45.8	
9.4	16.3	50.8		9.4	7 16.4	40.8		9.5	25.2	36.7		9.3	55.8	6.6		9.0	43.4	44.8	K
9.0	20.0	37.0		6.5	50.8	11.4	K	9.5	54.9	49.5	B	6.9	40 33.8	12.9	L	9.5	59.5	19.0	
8.5	35.8	19.6	B	8.5	8 7.8	22.3		6.5	58.1	24.3	K	8.7	49.6	2.0	K	9.4	58 8.8	26.7	
9.5	53.5	20.5		8.6	19.6	39.2		6.8	23 3.2	9.7	K	9.1	41 9.7	32.3		9.1	46.5	4.6	
9.5	58.4	3.0		9.0	36.3	50.3		9.1	16.6	5.6	K	9.5	42 10.0	38.1		9.4	57.8	35.4	
9.5	58.9	32.1		9.3	9 3.0	29.4		9.4	22.1	17.9		9.3	10.5	56.8		9.4	59 20.0	37.4	
9.5	53 16.1	39.1		7.0	11.4	14.9	K	9.5	46.4	9.5		9.2	12.1	18.4		9.4	22.5	34.4	
9.5	32.7	21.3		9.5	46.1	31.4		9.5	49.0	47.8		9.2	30.3	51.0		9.4	24.2	44.4	
8.8	50.3	49.6		9.5	50.3	17.8		9.1	54.0	31.3		9.1	33.7	20.4		9.1	39.0	1.0	
9.5	53.2	32.1		8.8	10 9.2	5.6		9.1	56.0	32.8		8.6	34.0	29.2	K	8.9	0 24.0	40.4	
8.4	58.5	8.1	L	9.5	11 13.1	32.8		9.4	24 6.5	18.5		9.4	44.0	27.5		9.5	1 15.1	50.4	
9.5	54 17.6	39.5		9.5	29 6	58.1		9.4	22.5	34.3		8.5	44.2	56.9		9.2	17.2	39.4	
9.4	21.0	15.7		9.3	12 8.1	29.8		9.0	44.1	33.8		9.4	46.3	13.6		9.0	38.1	52.6	
9.2	40.9	56.5		8.1	15.6	17.0	K	9.0	57.6	42.7		9.5	47.2	57.1		9.5	43.5	24.5	B
9.5	55 0.0	46.4		9.1	47.5	39.3		9.5	25 23.9	5.5		9.0	52.8	39.8	K	9.4	2 1.9	24.6	B
8.8	2.8	25.2	K	9.4	59.5	30.7	B	9.5	25.4	30.3		9.5	55.0	51.2		8.6	15.6	28.5	K
9.3	13.4	29.1	B	9.5	13 1.6	20.9		9.1	28.5	2.5	K	9.5	57.7	16.0		8.5	19.2	13.2	
9.4	28.5	12.6		9.2	17.0	40.0	B	9.4	54.6	27.3		6.5	43 21.1	56.9	K	9.4	20.5	25.1	
9.0	33.9	28.4	K	7.0	29.6	35.7	K	9.3	57.2	56.3		9.1	31.0	30.3		9.0	50.3	2.0	K
9.5	50.3	1.7		9.5	51.9	36.0		8.8	26 40.9	20.3	K	8.4	33.5	7.3		9.5	3 2.1	26.0	
6.1	56 27.0	24.3	L	9.2	14 46.9	8.5		9.1	27 7.9	51.2		9.4	54.6	18.4		9.3	32.2	50.3	
9.3	28.7	26.1		8.3	47.8	30.9		9.5	35.1	53.6		9.5	44 25.0	54.2		9.4	38,9	46.9	
9.4	31.5	11.6		9.5	52.8	55.0		9.5	37.5	45.3		8.8	34.1	41.4	K	8.2	48.0	55.9	K
9.1	57 5.3	43.3		7.5	57.0	19.4	K	9.5	28 3.1	21.3		8.5	43.1	29.4	K	9.0	4 13.2	7.0	K
8.9	17.8	28.0		9.3	59.5	49.9		9.4	29 4.8	44.2		9.5	49.7	31.2		7.5	30.1	47.6	K
7.7	24.3	14.4	L	8.1	15 1.5	13.3	K	9.5	12.0	21.8		9.4	45 20.0	56.8		9.4	50.0	34.4	
9.1	43.8	39.4		9.5	13.3	47.9		9.4	54.0	11.9		9.2	57.4	20.9		9.4	58.1	32.1	
8.5	45.5	41.9		8.9	42.1	47.8		9.4	30 9.6	2.7		9.5	46 5.3	38.8		9.4	5 49.9	28.4	
9.0	58 23.3	20.0		9.5	57.0	32.8		8.6	24.3	32.8	K	8.7	6.8	1.6	K	9.5	6 9.8	3.6	
9.3	26.9	2.7		9.2	16 4.7	54.5		9.5	39.8	2.5		9.3	15.7	49.8		9.5	20.9	38.8	
9.4	39.1	34.9		9.5	59.1	12.4		8.3	56.0	41.8	K	9.0	47 37.1	27.3	K	8.5	51.4	16.2	K
8.0	47.9	8.3	K	9.5	17 6.0	44.8		8.8	31 14.8	12.3		9.2	53.0	44.2		9.3	53.9	2.3	
9.1	56.5	7.4	K	9.3	10.6	3.2	S	8.8	15.1	4.3		9.5	48 15.2	12.3		9.5	7 6.9	33.0	B
9.2	59 13.1	2.3		9.5	14.1	6.2		9.3	45.0	31.8		9.4	43.1	2.0		8.9	54.8	20.8	
9.5	23.0	37.4		7.9	18.1	30.8	K	9.0	53.7	39.3	K	9.4	50.6	22.8		8.0	8 30.8	12.4	B
9.3	55.7	56.0		9.4	29.6	31.4		9.4	32 42.6	28.4		9.3	49 10.5	29.8		9.1	42.3	27.5	
9.1	0 8.3	23.5		9.4	42.6	27.2		9.1	55.4	3.0		9.3	29.1	52.6		9.4	9 14.5	5.1	
9.5	48.8	15.5		9.5	46.0	23.0		9.2	33 2.3	37.7		8.8	39.8	15.5	K	9.3	18.4	38.4	
9.5	1 13.6	55.4		8.7	50.2	1.8	S	8.9	27.1	41.3	R	8.8	40.3	23.9	K	9.4	18.8	34.4	
9.5	20.8	50.3		9.3	53.2	19.0	B	9.1	27.2	37.9		8.5	50 7.6	40.3	K	7.0	25.9	25.5	K
9.5	23.8	16.4		9.3	18 3.6	48.2		9.3	49.6	11.8		8.6	25.6	27.9		8.9	11 52.5	52.5	K
9.5	49.8	22.5		8.2	4.5	25.4	L	9.2	57.4	44.7	B	8.8	36.0	38.8	B	9.5	12 13.4	50.8	
8.5	2 14.3	32.4	K	8.1	11.4	5.3		8.0	34 5.3	22.4	L	9.5	49.6	51.7		8.3	15.5	10.3	K
9.5	25.7	8.5	B	8.7	43.9	7.1		9.1	11.1	54.0		9.5	51 1.9	33.3		9.4	13 2.5	15.0	
8.8	26.7	11.1	K	9.5	48.2	59.9		9.5	20.2	21.8		9.0	3.6	16.2	B	9.3	3.3	41.0	
9.2	45.3	33.4		8.5	53.0	51.7		9.5	30.1	11.3		8.4	44.5	11.9		9.3	10.0	8.3	
8.6	3 13.8	11.0	K	8.5	19 0.1	20.8	K	9.5	35.9	14.6	B	9.1	52 58.5	19.8		8.4	48.5	26.5	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	7ᵘ		+35°		7ᵘ		+35°		7ᵘ—8ᵘ		+35°		8ᵘ		+35°		8ᵘ		+35°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.0	13	48.5	18.6	K	9.5	27	52.5	35.4		9.5	49	32.2	51.5		8.3	4	52.1	40.8	K	9.1	26	4.5	56.4	
9.4		55.2	24.9	B	5.8	29	1.5	23.0	K	7.0	50	0.7	5.0	K	9.5	5	7.3	6.3		9.5		20.2	14.4	
9.0	14	13.7	56.4		9.2		15.2	22.2		9.4		17.3	23.6		9.4		9.5	58.4		9.0		21.9	5.7	
8.3		15.5	46.1	K	9.1		50.0	9.3		9.5		41.0	22.7		8.7		16.4	52.4	B	9.4		35.0	51.4	
9.3		25.0	13.8		9.5	30	39.1	15.1		9.5		54.3	5.0		9.4	6	26.7	49.3		8.6	27	24.0	19.5	K
9.4	15	7.9	53.9		8.3	31	12.7	0.9	K	9.5	51	2.1	0.7		9.2		40.5	58.0		8.8		29.0	13.0	K
9.5		16.4	27.1	B	9.5		29.8	46.0		9.0		4.8	59.7	K	9.0		52.1	47.5		9.1		55.2	43.1	
9.4		59.8	20.6		8.8	32	2.5	6.7	K	8.6	52	9.9	1.2	K	9.5		53.3	32.9		8.6	28	38.6	14.4	K
8.6	16	6.3	36.9	K	8.7		2.6	4.3	K	9.3		10.4	34.5		7.6	7	3.8	59.7	K	9.4		49.1	41.3	
9.4		23.6	7.1		8.8		28.5	48.4	K	9.5		15.6	55.2		8.7		7.6	56.3	K	9.4	29	36.7	34.9	
9.5		53.8	35.5		9.3	33	59.7	2.9		6.5		29.8	48.2	K	9.5		20.7	44.9		8.2		48.7	14.9	K
9.4	17	10.5	6.2		9.5	34	7.0	57.9		9.4		31.5	17.3		9.3	8	9.0	9.8		7.9	30	2.5	28.4	K
8.8		30.0	47.4	K	9.2		8.8	42.1		9.3		37.4	52.5		9.5		18.6	38.9		9.2		7.5	39.6	B
9.4		39.8	33.0	B	9.3		59.3	30.9	B	9.5	53	6.3	42.5		9.5		20.5	40.4		9.0		32.3	23.5	
9.5		52.8	27.0		9.5	35	20.0	12.0		9.4		15.7	58.9		9.3		48.7	57.9		9.5	31	10.6	9.0	
9.5		57.2	12.0	B	9.5	36	13.5	36.5		9.5		35.5	59.2		9.5	9	6.4	37.3		9.0		26.4	38.0	B
9.4	18	0.0	31.7		9.3		20.1	59.7		9.4	54	1.0	8.4		9.5		26.1	14.5		8.4		32.4	19.9	K
8.8		6.3	55.3	K	9.5		50.2	45.8		9.3		7.1	25.0		9.2		33.4	40.9		9.2		49.3	42.0	
9.3		26.7	43.5	B	7.5	37	36.6	18.4	K	9.4		18.6	30.6		9.3		37.7	53.7		9.0	32	31.1	16.5	
9.5		37.1	42.3		8.5		37.3	23.7	K	9.2		26.4	5.1		9.5		47.4	4.2		9.5	33	6.7	20.0	
8.2		42.0	23.6	K	9.5		54.5	48.4		8.5		27.2	48.3	K	8.6	10	8.2	29.5	K	9.5		29.5	38.4	
8.8	19	31.2	38.4	R	9.2	38	2.0	23.7	B	9.0	55	1.7	5.6		7.5		13.4	30.4	K	9.5	34	16.1	55.2	
7.5		55.5	6.2	K	9.5		22.8	52.6		9.2		2.6	21.2		7.3		28.2	39.1	K	9.5		16.5	34.9	
7.2		57.7	28.2	K	9.1		57.5	13.6		8.3		13.8	15.4	K	8.3		34.7	46.8		8.5		50.6	33.4	K
9.5	20	16.3	48.5		9.5	39	32.0	28.5		9.5	56	4.3	39.4		9.3		50.4	39.9		9.5	35	0.7	33.8	
9.3		44.5	51.3		9.4	40	30.7	11.0		9.5		7.5	45.5		9.0	11	41.5	53.8		9.5		20.4	23.9	
9.2		45.0	24.8		9.2		38.0	35.0		9.3		8.8	51.2		9.5		48.8	10.0		9.3	36	54.0	40.4	
8.9		46.7	1.6		9.4		46.1	47.8		9.5		38.5	17.6		8.0		51.2	47.2	K	8.8	37	20.9	16.8	K
9.2	21	23.3	41.5		9.5	41	19.2	16.1		8.6		46.8	4.3	B	9.1		57.4	25.5		9.5		39.8	37.2	
9.5		24.0	58.4		9.5		36.4	52.8		9.4		58.4	39.1		9.3	12	20.7	0.8	B	9.3	38	8.9	6.4	
9.5		31.4	6.2		9.1		39.8	21.1		8.9		58.6	11.0		9.5		23.1	57.8		7.7	39	9.2	8.6	K
9.2		37.1	32.2		8.8		46.9	21.2	K	8.8	57	10.2	10.5		9.5	13	21.7	9.1		9.4		11.8	27.3	
9.3		38.9	58.0		9.5	42	18.0	13.7		9.2		29.0	1.1		9.3		35.4	1.7		9.2		15.0	41.7	
9.5	22	25.0	39.0		9.3		24.2	52.3		7.8		34.4	10.7	K	8.5		45.7	57.1	K	9.5		58.7	30.3	
7.0		26.4	54.3	K	9.2		39.2	14.2		9.3		35.6	45.0		9.1	14	23.2	10.6		8.0	40	52.4	55.0	K
9.3		42.8	21.6		9.0		44.1	19.9	B	9.2		39.0	22.2		9.5	15	10.4	31.4		8.0	41	8.8	33.3	K
9.0		46.5	37.8		9.5		55.2	14.7		9.5		54.0	9.7		9.4		15.2	2.6		9.4		11.5	36.2	
9.4	23	1.5	34.0		9.0	43	12.0	17.0	B	9.5		55.1	58.3		9.5		34.1	58.1		7.0		38.3	36.2	K
9.5		11.2	8.8		9.3		12.4	42.8		9.5	59	2.5	51.0		6.0		47.9	29.9	K	9.3		50.7	12.4	
9.4		21.1	5.6	B	9.5		33.8	19.6		8.8		8.7	44.5		9.2	16	1.5	4.3		8.0		53.2	20.2	L
8.8		59.3	45.5	K	9.2	44	45.2	42.1		8.8		25.0	18.3		9.5		11.0	52.8		8.4	42	9.3	15.3	L
9.3	24	6.8	51.8		8.5		52.4	8.1	K	9.2		48.9	27.2		9.5		24.7	5.7		9.5		55.4	32.8	
9.5		28.5	56.0		9.0	45	17.1	47.3		9.5		49.6	4.1		9.5		54.5	47.9		8.8	43	1.5	46.8	K
9.0		47.5	35.8	K	9.0		18.2	27.5		9.5	0	0.0	58.0		9.4		56.8	56.4		9.4		17.0	6.9	
9.4		50.8	23.1		6.5	46	13.6	47.8	K	8.9		24.0	49.5	K	9.5	17	33.0	18.6	B	9.0		34.6	33.7	
9.2	25	1.2	37.6	K	9.5		18.5	40.0		9.5		43.5	33.0		9.3	18	31.4	57.8		7.8		48.2	17.8	K
9.4		1.4	59.1	B	9.5		21.2	53.2		6.5		44.7	54.4	K	9.5		44.2	37.8		9.5		51.9	6.9	
9.5		23.3	52.5		9.5		21.3	24.8	B	9.0		54.7	26.2		8.8		56.9	32.9		9.5		57.4	22.8	
8.5		44.5	22.9	K	8.9		24.9	16.0		8.7	1	6.5	20.5		9.5	19	9.5	7.6		9.5	44	0.0	1.5	
9.4		57.5	0.8		9.4		32.8	4.8		9.0		29.7	26.2		9.5	20	3.0	24.0		8.9		41.8	46.6	B
9.1	26	14.8	38.4		9.5	47	8.5	30.5		8.6		30.4	7.8	R	7.8		28.7	27.4	K	9.2		44.8	40.1	
8.0		18.2	11.0	K	9.5		13.5	19.5		9.2		31.0	43.5		7.8	21	47.4	51.8	K	8.0		53.6	23.8	K
8.6		38.9	18.0	K	9.0		18.1	14.7	B	9.3		45.1	52.1		9.1		54.9	0.3	B	9.5	45	2.7	5.4	
9.3		49.4	17.0	B	9.5		54.6	47.0		9.5	2	21.0	48.3		7.0	22	20.4	27.5	K	8.5		7.5	36.2	K
9.5		57.7	52.3		9.5	48	20.5	45.0		9.5		27.1	55.9		8.8		57.9	10.2		8.8		19.6	49.1	K
8.3		58.0	44.8	K	9.3		32.9	38.9	B	8.3		34.8	46.1	K	8.8	23	1.1	2.3		9.4		25.2	14.7	B
8.7	27	10.3	42.7	S	9.3		34.0	55.0		8.4	4	0.0	2.9	K	9.4		11.8	37.6	B	9.5		48.8	37.2	
9.0		31.6	34.5	K	9.5		41.3	12.8	B	9.5		5.0	28.9		8.3		24.6	3.1	K	9.5		51.3	34.2	
9.4		36.1	15.6		9.5		49.8	19.2		9.1		13.9	3.2		8.8	24	55.1	9.0		9.2	46	8.8	42.7	
9.5		51.0	21.6		8.0		52.3	19.3	K	9.3		51.3	59.1		9.5	26	1.2	33.8		7.7		18.9	40.2	L

1901—1960					1961—2020					2021—2080					2081—2140					2141—2200				
	8ᵘ—9ᵘ		+35°			9ᵘ		+35°			9ᵘ		+35°			9ᵘ—10ᵘ		+35°			10ᵘ		+35°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.3	46	38.2	17.8		9.5	4	58.4	4.4	B	9.2	24	49.0	48.1		9.2	47	40.4	18.9		9.4	18	7.5	1.8	
9.5		53.8	7.1		9.5	5	52.4	23.3		7.5	25	26.0	26.3	L	9.5		42.6	47.0		9.4		15.3	48.2	
9.3		57.0	19.8		9.0		54.3	1.1	K	9.3	26	26.3	36.6		9.5	48	18.3	57.8		9.5		18.4	54.1	
7.9		59.4	56.8	K	9.3		58.2	5.5		9.4		27.8	42.5		8.4		46.0	50.4	K	9.3	19	1.0	8.0	
7.5	47	59.5	34.2	K	9.0	6	16.4	57.8		9.3		28.9	15.4		9.5		55.5	9.8		9.2		52.8	17.3	K
9.3	48	10.2	42.7		6.3		20.3	13.5	K	7.5		57.8	23.8	K	7.0	49	12.0	47.8	K	8.5	20	32.1	37.5	K
9.4		12.8	44.1		9.0	7	18.3	18.4	K	9.1	27	16.4	28.8		9.5		13.1	1.5		8.6		38.8	35.8	K
9.4		42.9	9.1		9.5		40.4	1.2		9.5		49.9	28.8		9.5		13.1	9.2	B	8.5	21	26.2	33.7	K
9.0		58.7	14.8		8.4		56.9	45.0	K	9.5	28	50.6	50.9		9.5		55.4	46.9	B	9.3		43.4	46.7	K
9.2	49	35.9	46.0		9.1	8	28.3	0.2		9.5	29	1.4	29.3		9.5	50	10.8	51.4		9.5	22	28.8	42.0	
9.0	50	10.3	37.2	K	6.7	9	29.0	57.6	K	9.5		10.8	13.5		9.1	51	26.6	46.5		9.0	23	52.0	43.7	K
8.4		12.8	30.8	K	9.5		35.4	19.9		9.5	30	10.0	2.0		9.5		47.4	59.3		9.5	24	13.6	56.2	
7.7		43.0	22.8	L	9.5		51.5	14.4		7.0		42.0	53.3	K	9.5	52	26.5	51.8		9.1		42.1	15.6	K
8.6		44.9	4.3	K	8.8		53.1	43.5		7.0	31	12.0	59.6	K	8.5		41.3	19.9	K	6.0	25	13.4	45.1	K
8.2	51	16.2	24.8	L	8.7	10	41.0	6.7	K	9.5		33.4	6.5		9.5	53	26.9	57.3		9.2		38.5	31.0	K
8.5		33.5	46.2	K	9.1	11	4.8	32.7		8.4	32	13.2	1.1	K	9.5		50.4	21.3		9.0	26	18.8	26.1	K
9.2		41.1	5.0		8.5		37.7	43.5		8.6		37.8	45.0	K	9.4	54	25.0	55.7		9.5		29.2	6.9	
9.4		50.8	51.3		8.9	12	11.4	14.4		9.5	33	2.9	51.9		8.5	55	46.9	11.8	B	9.2		45.8	53.1	K
9.5	52	42.0	18.7		3.1		13.1	0.6	K	7.5		8.8	13.0	S	8.2	56	0.5	47.4	K	9.0		47.8	52.8	K
9.4		56.5	52.8	B	7.8		18.9	33.5	B	9.3		31.0	0.6		9.5		44.8	53.3		9.1	27	7.0	12.1	
9.5	53	6.1	51.9		8.6		22.1	2.5	K	8.0		45.7	39.1	L	7.5	57	4.3	22.4	L	8.5	28	5.5	52.4	K
8.9		28.0	56.5	K	9.4		57.3	49.9		6.5		58.2	44.0	K	7.0		16.3	41.5	K	8.3		7.7	36.6	K
9.5		32.7	59.6		9.4	13	0.4	48.9	B	8.2	34	6.3	1.7	K	9.2		33.3	18.2		9.5		20.0	5.6	
9.1		59.3	30.3		9.5		11.3	47.4		9.1		38.9	34.6	K	9.4		41.9	23.0		9.2		28.1	35.1	K
8.9	54	1.2	13.0	K	8.8		22.9	26.3	K	9.5	35	3.2	3.4		9.0		47.8	39.0		9.2		53.4	52.2	K
9.5		6.3	49.7		8.8		27.0	37.1		7.7		32.3	21.8	K	8.4	58	15.5	3.6	K	8.7	29	16.8	29.9	K
9.5		7.7	10.4		9.3	14	0.8	29.8		9.0		57.3	54.2		9.4		23.6	31.6		9.2		56.5	36.5	K
9.5		21.0	5.5		9.5		25.1	34.1		8.4	36	1.4	37.6	K	8.7		26.7	49.5	K	9.3	30	45.7	39.4	B
9.3		55.8	13.3		7.7		57.9	10.1	L	8.9		49.9	36.1	K	9.4		44.9	39.1		9.5	31	17.9	12.4	
8.8	55	12.2	35.7		8.4	15	9.3	22.4	K	8.6		52.8	10.4	L	4.4		51.8	57.7	K	9.5		43.1	49.9	
8.1		18.0	7.1	L	9.2		16.4	25.3		9.1	37	27.4	32.6		9.5	59	23.9	5.3		9.5	32	53.6	33.8	
9.3		23.0	46.9		8.8		19.3	54.7		9.5		28.9	58.2	B	9.0	0	17.4	12.4		8.5		57.4	26.8	K
8.7		45.5	10.6	L	9.5		24.6	8.2		9.5	38	20.4	19.4		9.0	2	21.7	9.9	K	8.7	33	46.7	2.0	K
9.5	56	36.9	2.9		9.3	16	8.9	57.3		9.0		20.7	1.9	K	9.0		31.4	20.9		9.3		50.1	16.2	B
8.6		42.8	19.8		7.8		43.7	46.1	K	9.1		21.1	52.0	K	9.1		35.7	33.8		7.8	34	54.4	55.6	K
9.5	57	13.8	59.7	B	8.1		52.0	53.0	K	9.0		22.2	33.6	K	9.1		42.4	7.9	K	8.4	35	0.5	30.9	
8.0		35.0	27.3	K	8.9	17	2.8	38.6		9.5	39	3.9	17.4		9.3	4	5.1	56.2	K	9.2		19.4	15.5	K
8.5		42.6	54.9	K	9.5		22.6	55.4	B	9.5		22.5	53.0		9.5		21.4	34.6		9.1		47.4	31.3	K
9.5		51.5	43.7		9.2		23.8	12.0	B	8.9		27.6	5.3	K	9.5		44.9	53.6		9.4	37	40.0	51.0	B
8.5		53.2	5.9		9.5		26.7	51.9		9.5		49.4	57.8		9.1	5	40.3	46.9	K	9.2	38	21.9	41.0	
9.0	58	9.3	20.8		8.8	18	0.0	4.9	K	9.5	40	3.7	25.8		9.2	7	10.2	15.6		8.5		33.1	28.4	L
9.5		47.7	51.2		9.0		40.3	19.4	K	9.2		52.8	13.0		6.8		41.7	53.5	K	9.5		41.7	41.0	
9.5	59	24.9	10.5		9.5		40.4	45.0		9.5	41	4.6	36.6		8.5		45.5	7.2	K	9.5		48.6	33.9	
9.5		37.0	40.2		8.8		44.1	30.3		9.4		58.3	17.2		9.5	9	7.4	32.0		9.5		55.1	55.6	
7.9		40.6	56.5	K	8.5		45.3	25.3	K	9.4	42	8.9	17.7	B	9.4		9.5	8.8		8.9	39	34.9	23.1	K
9.5		45.8	51.2		9.5	20	45.6	46.0		9.5		51.1	38.1		9.5	10	32.9	22.3		9.4	40	33.2	50.0	
8.6		51.2	24.8		9.5	21	16.4	15.9		9.4	43	28.6	4.3		9.4	12	22.9	40.8		9.3		35.8	54.7	B
9.1	1	0.2	28.3		9.3		37.0	59.2		7.3	43	55.8	47.1	K	9.5		51.0	29.7		9.2	41	15.7	23.1	K
7.9		7.6	59.5	K	9.0		38.8	13.1		9.4		59.2	51.0		9.5	13	21.5	5.6		9.5		54.3	54.0	
9.5		13.0	15.8		9.1		43.2	57.7	B	9.4	44	9.9	9.6		6.8	14	41.5	56.8	K	9.5	43	37.4	45.8	
9.1		26.2	41.2		9.5		47.1	5.5		9.5		24.4	57.8		9.2		48.4	39.8	K	9.3	44	33.6	58.1	
9.0		35.5	11.5		9.5		53.6	43.6	B	9.2		28.3	31.7		9.3		48.7	41.2	B	8.8		37.7	5.9	K
9.5		39.3	51.3		8.9	22	19.8	44.8		6.8		57.8	40.6	K	9.2		53.2	11.6		9.2	47	41.2	50.0	K
9.3	2	23.8	52.8	B	9.3		42.9	11.5		9.5	45	16.3	32.1		9.5		53.9	20.1		9.2	48	27.5	25.8	K
8.3		34.6	17.9	K	5.7		43.2	45.1	K	9.1		19.8	21.3		9.5	15	47.0	14.4		9.1		37.7	30.3	B
8.8		44.9	36.6		9.2		58.3	2.6	K	9.5		36.8	5.6		8.5	16	15.4	44.4		8.2		59.0	57.9	L
9.3		50.9	42.5		9.3	23	4.6	8.4	K	8.3		49.9	27.3	K	8.9		32.9	16.5	K	9.4	49	3.8	20.5	B
9.1	3	7.2	58.0		9.5		27.2	2.7		9.0		59.3	16.4	K	9.3		57.7	37.0		8.9		44.8	23.4	K
9.3		37.4	42.0		9.2		36.5	9.1	K	9.5	46	3.5	7.1		9.4	17	14.4	33.7		9.0		54.9	55.2	L
7.8	4	24.4	42.0	K	9.2		46.8	14.4		8.9		52.6	40.5	K	9.3		53.7	52.5		9.5	50	3.5	8.7	

2801—2860

	16m		+35°	
m	′	″	′	
9.3	11	24.6	36.9	
9.5		46.0	45.0	
8.9		54.4	16.5	B
9.2	13	24.6	39.7	K
9.4	14	12.5	20.4	
9.4		24.6	14.2	
9.5		28.5	52.6	
9.5	15	25.9	8.3	
9.1	17	51.2	55.3	K
7.5		59.2	56.5	K
9.5	18	34.2	35.8	
9.5	19	7.0	49.4	
9.5		29.5	1.1	
9.1	20	0.7	51.7	K
9.5		41.6	44.4	
9.4	21	6.9	11.7	
9.5		49.3	40.1	
9.4	22	45.0	12.1	B
9.4		46.1	18.2	
9.2	23	22.2	26.3	K
9.5		38.1	9.0	
8.2		55.2	56.0	K
7.9	24	27.7	30.7	K
8.1		44.3	6.3	B
9.3		46.9	28.5	K
9.5		56.0	54.2	
9.5	25	39.4	58.9	
7.0		45.8	32.7	K
9.2	26	33.9	7.4	
9.2		47.0	7.8	K
9.5	27	19.6	7.7	
8.5		32.2	24.1	K
9.5		56.3	57.1	
8.1	28	51.2	48.6	K
9.5	29	11.7	17.6	
9.5		14.7	0.5	
9.3		57.1	51.2	B
9.5	30	38.5	55.9	
9.5	31	16.9	56.9	
9.5		38.2	31.0	
9.3	32	30.3	33.6	
9.2		42.3	12.7	B
9.2		52.2	26.9	
9.0	33	5.7	31.7	K
9.4		6.6	56.1	
9.5		27.6	56.5	B
8.4	34	4.1	49.0	K
8.0		18.7	21.5	B
7.9		29.6	48.9	K
9.4	35	9.8	5.1	B
9.1		21.9	57.5	K
9.1		48.1	10.3	K
9.5		52.9	29.9	
9.4	36	19.5	59.0	
8.4		46.3	18.0	K
8.6		57.4	8.3	K
9.5	37	8.9	15.2	
9.5		31.6	46.5	
9.1		47.0	4.8	K
9.4		50.0	12.1	

2861—2920

	16m—17m		+35°	
m	′	″	′	
9.5	37	52.5	28.3	
9.5	38	9.7	54.5	
9.3	39	26.5	17.0	
8.7		34.9	59.0	K
9.4		47.0	2.0	
9.5	40	6.1	2.5	
7.5		34.9	53.8	K
9.5		53.2	53.4	
9.2	43	6.9	9.2	K
7.0		47.0	12.4	K
9.3		48.2	31.4	
9.3	44	34.9	29.4	
9.2		41.8	47.5	
9.5		43.2	4.0	
9.2	45	19.3	57.3	
9.5		51.5	2.3	
9.1	46	18.1	48.0	B
7.6		58.2	43.8	K
9.4	47	9.6	30.8	
9.4		38.3	50.6	B
8.3		44.9	9.1	K
8.2	49	2.2	23.1	K
8.7		17.4	6.1	
9.4		26.5	29.6	B
9.4		54.6	41.0	
9.3		58.6	53.7	
9.3	50	7.2	31.7	
9.5	51	26.3	14.5	
9.4		47.2	22.8	
9.4		53.1	11.3	B
8.4		57.2	31.0	B
9.0	52	57.6	17.4	
9.5	54	0.2	30.1	
8.2		3.0	5.0	K
9.0		19.4	53.4	
9.4	55	4.8	9.6	
9.3		13.4	57.4	
9.0		23.6	22.8	
8.9		27.0	5.9	K
9.2		27.8	35.3	B
8.6		41.9	41.0	K
9.0		56.7	44.8	K
9.5	56	10.1	31.6	B
8.3		25.1	45.5	K
8.3	57	20.8	58.9	K
9.4		35.1	18.3	
9.5		36.9	43.8	
8.8		44.6	27.0	
9.5		52.0	5.6	
9.5	58	0.1	11.0	
6.5		20.2	36.9	K
9.3	59	30.0	2.9	B
9.5		36.3	12.1	
9.5	0	32.0	7.1	
9.5		40.2	49.1	
9.5	1	9.3	28.1	
7.4		29.7	31.1	K
9.1	2	19.5	57.4	
9.5		40.0	14.8	
9.2		45.7	14.0	

2921—2980

	17m		+35°	
m	′	″	′	
9.4	3	17.7	35.9	
7.1		19.1	13.1	B
9.5	4	11.9	42.8	
9.5	5	20.4	28.0	
9.0		42.1	42.7	K
9.0	7	7.9	34.5	K
9.1		17.5	1.1	
8.9		18.5	7.5	
7.7		46.0	20.7	L
9.5	8	12.4	13.6	
7.8		12.9	36.0	K
9.4	9	43.7	33.5	
9.1		48.8	49.3	
9.5		52.8	48.1	
8.0	10	15.1	22.5	K
9.5		28.3	27.3	
9.5		37.6	35.1	
9.5		50.0	50.8	
9.5		50.6	32.4	
9.5	11	5.8	7.8	
9.5		28.1	14.5	
8.9		33.0	13.1	K
9.5		40.5	28.5	
9.5		59.7	46.3	
9.3	12	10.5	26.6	
9.1		22.5	8.2	K
8.6		30.0	46.1	
9.1	13	36.8	49.0	K
9.3		41.7	18.6	B
9.5	14	8.9	2.5	
9.5		9.4	33.5	
9.2		46.5	22.8	
9.2		51.3	50.5	K
8.2		58.8	50.6	K
7.7	15	19.0	31.4	K
9.0	16	1.1	21.0	K
9.3		2.6	59.0	
9.4		23.0	12.5	B
9.1		29.4	33.5	
9.1		30.9	38.6	
8.0		30.9	57.2	K
8.7		39.3	56.4	K
9.5	17	6.0	47.7	
9.5		11.0	44.2	
9.0	18	40.4	20.8	
9.3		53.1	13.2	
9.5	19	40.4	36.6	
8.7		45.3	52.3	L
9.2	20	5.7	33.2	B
9.5		19.0	39.7	
9.0		43.4	38.0	
9.0		46.4	48.0	
9.4		50.0	26.0	
9.4		56.2	38.0	
9.4		59.6	57.2	
9.0	21	17.9	4.9	
8.5		32.2	53.6	K
9.5		44.0	13.5	
7.6	22	21.3	50.4	K
9.0		28.5	33.8	

2981—3040

	17m		+35°	
m	′	″	′	
9.3	23	0.0	53.9	
9.5		11.0	59.7	
9.5		23.9	2.5	
9.1		26.2	58.0	
9.3		43.5	11.7	
7.2	24	18.2	3.8	K
9.5		37.5	47.3	
9.5		58.8	52.3	
9.5	25	31.2	0.5	
9.4		42.5	42.2	
8.9		43.0	44.6	K
9.5		51.0	12.5	
9.5	26	17.3	30.0	
9.1		30.2	42.5	
8.8		47.5	17.0	R
9.5		48.2	55.6	
8.5		50.8	50.1	K
9.3	27	5.4	45.1	
9.3		17.5	41.8	
7.8		19.8	51.2	K
9.2		21.5	31.5	R
9.0		33.5	17.3	K
9.5		46.3	1.7	
9.0	28	1.0	25.4	K
9.5	29	7.8	55.3	
7.5		34.0	58.3	K
9.0		49.0	45.2	
8.8	30	21.5	41.3	K
9.5		38.5	45.2	
9.2		49.3	42.8	K
9.5	31	15.5	46.9	
9.3		26.5	16.6	
9.2		29.3	22.8	
9.5		44.8	10.0	
9.5		51.5	16.3	
7.2	32	14.3	52.6	K
9.1		33.0	17.0	
9.1		35.0	29.4	
9.3		35.6	6.3	
7.7	33	0.1	3.7	B
9.0		23.5	13.6	
9.5		27.0	44.7	B
9.1		30.6	26.8	B
9.5		48.0	30.3	
9.5		50.6	44.3	B
9.3	34	5.7	35.5	
8.8		14.0	44.7	K
9.5		22.3	3.4	
8.7		48.5	53.5	K
9.4		50.9	14.2	B
9.3	35	0.5	31.0	
9.5		10.8	24.2	
9.1		14.0	30.1	
9.0		17.3	38.4	
8.7		17.9	51.1	
8.5		33.0	32.5	
9.5		37.5	59.8	
9.5		46.2	5.0	
9.1		52.5	36.2	
7.9	36	7.1	48.7	B

3041—3100

	17m		+35°	
m	′	″	′	
7.8	36	29.6	25.6	B
7.7		38.3	8.8	K
8.6		54.5	26.2	K
9.5	37	0.7	59.0	
9.5		27.8	41.6	B
9.5		55.0	14.9	
9.3		57.2	9.1	B
9.5	38	19.6	7.1	
9.3		33.5	16.9	
8.5		39.5	52.7	K
9.5	39	9.0	41.7	
9.3		10.0	38.3	
9.3		12.6	51.0	
8.8		17.4	31.5	
9.0		27.1	50.2	K
9.5		30.8	29.7	
9.0		31.3	9.8	
8.8		33.0	36.8	B
7.0		40.9	16.8	B
9.3	40	14.5	0.1	
9.5		20.5	28.7	
7.7		22.2	56.8	K
9.5	41	19.0	29.4	
8.8		29.5	21.5	K
8.6		35.3	41.8	
8.5		35.8	45.6	
8.9		52.0	45.6	
8.4		58.7	0.6	K
9.2	42	10.6	6.3	
8.9		43.7	17.3	B
9.1		45.5	28.3	
9.5	43	3.5	12.5	
8.8		26.0	33.2	
8.6		30.5	39.7	
9.5		42.2	4.2	
9.3		55.5	52.3	
8.8	44	10.0	28.6	
9.3		24.1	51.6	
8.0	45	18.5	28.7	K
8.5		19.5	40.8	
8.8		21.0	59.4	
9.4		25.1	13.0	
8.0		26.5	25.6	K
9.3		40.3	20.8	
8.4		44.0	22.8	K
9.3	46	19.0	43.9	
9.3		40.0	46.9	
8.9		45.7	44.7	B
9.5		57.4	36.8	
9.0	47	10.0	56.3	
8.5		26.2	48.1	
8.5		28.5	6.7	K
9.3		31.4	58.9	
9.0		36.2	10.8	
9.2		36.8	21.5	
9.0	48	17.5	55.5	
9.5		25.3	49.4	
6.7		26.7	43.5	K
9.5		45.2	8.9	
9.0	49	0.6	35.2	B

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ʰ—18ʰ	+35°			18ʰ	+35°			18ʰ	+35°			18ʰ	+35°			18ʰ	+35°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	49 48.3	48.7		8.8	3 53.5	8.7		9.3	15 42.4	43.1		9.5	27 15.9	58.0		8.8	37 54.8	5.1	K
9.0	50 7.0	33.1		8.9	56.6	29.2		9.5	16 11.7	8.8		9.3	20.1	25.1		8.3	38 12.1	24.4	K
9.5	15.9	6.8	B	9.5	4 10.9	45.6		9.5	22.8	56.5		9.5	20.9	57.0		9.5	39.5	27.4	
8.8	32.8	37.1		8.9	25.4	57.6		9.5	43.8	7.8		9.5	35.5	34.3		9.1	42.2	49.4	
9.5	33.0	53.6		8.8	26.5	29.3		9.3	17 3.0	28.3		9.5	44.7	8.9		9.5	49.9	33.3	
9.0	58.9	45.4	B	9.5	53.7	47.0		9.5	9.8	6.3		9.4	55.9	57.7		8.2	39 13.2	22.2	K
9.3	51 3.7	43.9		8.9	5 10.0	17.7		9.3	16.4	16.2		9.5	58.1	1.4		9.5	37.3	48.1	
9.5	4.0	52.2		7.3	17.7	8.8	K	8.4	34.9	2.1		8.4	28 20.9	3.7		9.5	47.7	2.7	
9.4	36.9	3.0		9.3	35.2	47.1		9.5	43.7	34.7		8.6	24.2	22.4	B	8.7	40 5.1	23.4	S
9.5	52.5	58.7		9.2	45.4	18.0		9.4	49.4	15.9		9.1	31.0	28.1		9.0	5.6	23.9	
8.5	52 5.4	48.8	B	8.8	55.7	35.3	K	9.5	57.1	53.2		9.5	54.9	31.3		9.5	9.7	35.0	
7.0	15.5	42.7	K	9.5	6 11.8	0.8		9.5	18 41.8	5.4		8.7	29 5.7	2.2	B	8.9	35.2	21.4	
9.3	40.0	22.8		9.5	13.8	4.4		9.3	45.0	56.0		9.3	22.8	33.0		9.0	40.0	26.8	
9.3	53 15.5	25.2		9.5	22.5	49.1		8.5	48.6	37.5	K	7.2	32.5	41.4	L	9.5	46.9	57.2	
9.2	27.5	13.0	K	9.5	23.9	57.5		9.5	57.0	56.0		9.5	30 7.9	57.5		8.3	50.4	42.9	K
7.2	34.5	39.2	K	9.5	44.7	21.5		9.5	19 58.3	18.6		9.5	20.9	30.3		9.3	41 7.2	22.1	
9.1	38.5	12.5		8.1	7 22.9	31.3	K	9.4	20 13.8	5.6		9.3	30.7	35.1		9.3	24.1	33.9	B
9.3	59.3	56.2		9.1	23.5	14.3		9.5	16.6	25.4		9.3	46.8	6.1		9.5	26.9	56.2	
9.4	54 12.0	26.3		9.5	24.8	57.3		9.1	16.9	3.6		8.7	59.8	6.3	K	9.5	35.3	18.2	
9.5	49.5	5.6		9.1	27.8	32.5	K	7.2	37.4	15.5	K	9.1	31 11.1	24.6		9.3	43.2	50.1	
9.3	55 13.5	34.2		9.3	35.9	5.6		9.5	39.0	26.3		9.1	21.5	13.2		7.3	59.9	43.4	L
9.5	14.1	53.9		9.3	37.5	23.5		9.1	50.1	25.8		9.5	29.6	9.8		8.7	42 49.1	53.4	
9.0	26.0	12.8		9.5	38.5	53.6	B	9.1	56.0	27.0		9.5	38.8	52.9		9.3	55.6	11.4	
8.8	40.5	11.5		9.5	57.8	24.9		9.0	21 0.1	24.5	K	9.5	42.4	42.9		8.5	43 37.5	42.4	
9.1	42.8	5.9		9.0	8 1.5	41.1		9.5	10.2	2.0		9.5	49.0	28.1		9.4	44 12.8	44.7	
9.3	42.9	45.8	B	7.7	6.9	8.9	K	9.2	11.6	38.0		9.5	53.2	53.8		9.3	13.4	0.0	B
9.3	56 1.4	58.7		9.0	9.8	40.1		9.3	15.0	23.0		9.4	56.2	37.0		9.4	17.9	4.2	B
8.2	12.3	31.9	B	9.0	18.5	23.8		9.3	15.0	27.2		9.3	32 14.1	51.6		9.5	20.2	2.0	
8.6	24.3	2.8	K	9.5	30.0	1.2		9.4	25.5	1.0		9.5	20.6	37.5		9.5	32.8	31.9	
8.5	31.0	23.8	K	9.5	39.0	54.6		8.0	31.0	37.7	L	8.4	22.8	32.0		9.2	39.7	35.7	
9.0	36.6	46.6	B	9.0	9 9.3	47.9		8.0	50.7	59.7		9.5	23.4	17.7		9.0	48.6	11.5	K
9.5	57 12.0	36.2		9.1	19.4	59.6		8.2	56.0	56.1		9.2	29.1	48.5		9.5	50.7	35.2	
8.8	14.4	27.3	K	9.5	35.3	47.9		9.2	58.5	42.4	K	9.5	40.2	7.1		9.4	45 0.3	0.8	
9.5	48.5	47.3		9.3	49.9	3.7		9.2	58.7	37.2		9.5	47.9	46.8		9.2	12.4	43.5	
9.1	58 6.3	0.5		9.5	10 0.5	41.2		8.1	22 11.0	26.4	K	9.2	48.5	39.9		8.9	35.7	36.1	
8.4	7.9	58.1		9.5	8.2	22.7		9.5	24.3	38.0		9.3	55.5	41.9		8.5	42.9	31.5	K
8.9	11.6	35.7	K	9.5	29.4	42.7		9.5	25.6	25.0		9.1	33 5.8	6.0	K	9.3	53.5	13.7	
9.3	16.2	36.9		9.5	40.8	5.9		9.5	47.5	40.9		9.4	16.0	28.7		9.5	46 4.8	33.0	
9.2	22.1	1.7		9.2	52.2	33.6	B	9.5	59.5	14.7		7.0	18.0	56.0	K	9.1	5.0	28.1	K
8.6	28.5	34.1	K	9.3	59.4	58.2		9.5	23 10.6	37.2		9.5	49.5	15.6		9.5	12.3	17.5	
8.2	44.8	8.6	K	9.4	11 1.3	22.7		8.7	39.3	0.9	K	9.4	34 10.1	24.4		9.4	18.0	54.8	
7.0	48.8	59.0	K	9.4	8.2	49.0		8.0	43.5	42.4	L	9.5	18.0	31.5	B	9.2	45.0	54.0	
9.3	54.3	39.8	B	9.5	19.7	30.1		8.5	44.5	51.2	B	8.8	20.2	48.5		9.5	57.8	35.0	
9.5	59 6.0	15.9		9.5	25.9	2.6		9.5	24 23.8	5.1		8.8	25.5	14.4		9.4	58.0	41.7	
9.5	11.5	58.4		8.5	12 16.3	19.1		9.4	31.6	10.5		9.0	27.1	52.9		9.2	47 11.9	56.5	
8.5	27.2	58.2	K	9.3	20.8	40.2		8.3	46.3	18.0	K	9.5	33.5	13.2		9.5	16.2	50.8	
9.3	0 3.5	13.8		9.5	40.0	28.8		9.5	25 15.0	27.2	B	9.1	36.8	5.3		9.5	27.9	56.5	
9.0	15.9	6.3		9.2	13 25.9	3.4		9.1	16.8	32.5	K	9.5	41.9	56.7		7.2	31.3	18.5	R
9.5	21.8	53.5		9.5	28.5	8.7		9.0	18.3	37.6	B	9.5	47.4	44.9		9.1	34.1	51.4	R
9.1	26.6	9.3		9.5	45.0	15.6		9.4	24.8	38.2		9.3	35 31.3	41.8		9.2	44.4	44.4	
9.0	53.0	25.6	K	9.2	51.0	27.1		9.3	35.3	46.0		9.5	43.1	9.3		9.4	54.0	48.2	
9.2	1 18.2	55.5		8.5	53.8	4.9	K	9.5	43.0	57.9		9.4	50.4	37.9	B	9.4	55.0	3.2	
9.3	22.5	58.0		9.2	14 16.8	32.5		9.4	45.7	15.9		9.5	53.2	21.9		9.4	48 0.0	9.3	B
9.5	27.5	26.6		9.3	23.2	49.3		9.5	48.8	33.3		9.5	53.9	15.9		9.5	5.7	54.9	
9.5	30.2	36.7		8.7	23.4	40.5	B	9.5	59.8	33.3		9.0	36 18.1	24.8		9.3	6.0	44.4	
9.1	38.3	55.3		9.0	32.8	32.7	K	9.4	26 3.9	3.4		9.5	29.4	58.4		9.0	12.2	55.3	
9.0	43.1	44.6	K	9.3	53.2	22.1		9.3	13.0	55.0	K	9.5	46.3	49.5		9.5	18.3	18.5	
9.5	2 45.6	17.6		9.4	55.6	45.3		8.4	38.8	32.1		9.5	37 18.7	36.2		9.4	39.7	49.1	B
9.5	3 5.7	26.3		9.5	15 2.5	39.9		8.7	44.9	31.3		9.5	20.8	45.8		7.5	42.5	35.6	B
9.1	12.5	0.7		9.5	24.2	48.6		9.4	57.9	3.9		9.5	39.3	18.8		8.9	45.9	6.4	

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵘ	+35°			18ᵘ—19ᵘ	+35°			19ᵘ	+35°			19ᵘ	+35°			19ᵘ	+35°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	48	50.4	15.3		8.2	58 34.0	56.1	R	9.5	7 6.0	4.7		9.4	15 32.0	23.5		9.3	23 8.3	55.1	K
8.6		51.3	56.5		9.5	45.1	51.0		8.7	11.8	18.3		9.4	35.3	53.1	B	9.4	12.7	15.6	
9.0	49	10.5	49.2	B	7.8	55.8	34.0	L	6.8	13.6	56.5	L	9.1	40.0	32.1		9.5	30.3	0.6	
9.3		37.2	2.1		9.5	57.9	57.7		8.9	15.1	50.8	R	9.4	50.0	9.0		9.3	40.8	52.1	
9.1		42.5	59.9		9.4	59 10.9	2.4		9.0	19.2	53.5		9.4	16 24.1	45.1	B	9.4	47.5	15.3	
9.5		44.9	46.3		9.5	37.0	1.4		9.2	31.8	55.2		9.4	26.1	41.6		9.4	51.5	46.6	B
9.5	50	8.3	20.4		9.5	38.4	42.9		9.5	46.2	8.3		8.9	27.3	26.9		9.5	52.0	43.8	
8.3		15.3	45.4		9.2	46.6	11.0	K	7.8	8 2.3	18.2	K	8.4	34.0	55.6	L	8.3	24 0.0	1.3	K
9.4		28.7	9.5		9.3	50.4	44.1	K	8.4	9.4	38.9	K	9.2	35.6	12.2	B	9.5	7.7	15.5	
9.3		31.4	43.6		9.5	52.8	59.2		9.4	10.2	12.7	B	9.4	38.2	18.7		6.5	15.4	59.5	L
6.8		43.7	37.0	K	9.4	58.5	57.2		8.2	15.3	1.4	K	9.4	40.3	25.6		9.5	26.5	8.2	
8.6		54.6	18.7	B	8.7	0 1.6	38.0	K	9.3	44.5	52.6		9.5	55.1	53.9		9.5	30.4	48.7	
9.4	51	17.3	47.9		9.4	10.4	43.4		9.5	9 1.6	46.2		9.4	17 27.2	23.1		9.4	40.7	29.0	B
9.5		25.7	59.3		9.5	31.5	40.7		7.8	25.2	54.8	K	9.5	33.0	52.2		9.5	54.0	21.5	
9.3		36.2	32.5		9.2	33.0	18.7		9.4	30.0	26.9		9.5	18 16.2	50.5		9.3	54.2	6.2	
9.5		58.4	9.0		9.5	44.7	4.0		8.6	46.1	53.1	K	8.8	17.3	40.2		9.2	25 8.4	41.3	K
9.2		59.7	3.6	K	8.0	47.3	39.6	K	9.5	48.5	24.7		9.3	20.1	18.5		9.0	19.0	36.8	K
9.5	52	3.5	37.6		8.7	50.4	35.4	K	9.5	10 7.0	8.6		7.9	39.0	54.3	L	6.5	32.1	55.6	K
9.1		10.3	41.1	B	9.4	1 18.3	4.5		9.5	35.3	38.3		9.4	48.7	43.7		9.5	48.8	52.9	
9.2		12.7	36.0		7.3	38.1	54.5	K	9.5	35.4	47.4		9.5	19 1.9	51.2		8.9	49.1	26.7	
9.3		12.7	44.5		9.5	38.2	48.1		9.5	43.0	13.8		9.5	5.1	48.5		8.9	51.5	6.0	
9.5		27.8	8.1		9.0	48.0	14.6		9.5	51.1	24.7		8.3	7.8	30.0		9.5	26 1.7	43.9	
9.5		30.5	42.6		9.5	2 1.4	35.4	B	8.8	53.1	36.0		9.4	8.6	49.3	B	9.5	6.9	25.9	
9.5		41.2	22.3		9.4	2.8	10.4		9.5	11 15.5	38.3		8.5	18.1	18.5	K	9.5	14.3	13.1	
9.5		50.0	55.0		5.2	7.6	52.5	B	9.4	24.9	45.5		9.2	25.9	47.6		9.5	18.6	11.1	
9.4		58.3	35.8	B	9.5	13.2	47.4	B	9.0	27.0	30.9	R	9.3	31.8	10.6		9.5	34.1	52.3	
9.5		58.6	10.1		9.2	40.5	12.6		9.5	32.7	55.2	B	9.4	45.7	27.9		9.4	42.5	3.5	
8.9		59.4	44.4	K	9.0	44.1	32.6	R	9.3	38.0	13.9		9.4	46.8	11.1		9.5	49.3	36.5	
9.5	53	7.1	53.0		9.0	51.2	17.5		9.5	38.3	3.5		7.9	53.5	42.9	B	9.5	49.6	56.8	
9.5		9.9	46.8		9.5	48.0	35.8		9.5	56.4	17.6		9.4	59.6	25.2		9.5	27 4.7	20.0	
9.3		14.5	42.1		9.5	56.6	50.9		9.0	59.1	50.6		9.3	20 24.5	14.5		9.1	16.8	0.8	
9.5		22.8	51.0		9.5	58.3	27.7		8.2	12 0.3	43.4		9.3	38.4	32.4		9.1	18.1	53.1	
9.1		52.2	49.8	K	9.5	3 43.1	26.2	R	8.9	11.3	7.0	K	8.7	44.0	38.0	K	9.0	49.2	31.6	
9.5	54	9.9	29.6		8.8	53.3	10.1		9.5	27.9	51.4		8.0	44.7	54.5	L	9.5	28 1.5	55.1	
9.4		15.1	36.3	B	9.4	4 16.2	59.4		9.5	37.6	59.8		9.1	51.8	15.2	B	9.5	8.4	59.8	
9.2		26.2	48.1		9.5	18.0	1.9		9.4	42.5	49.0	B	9.0	53.2	25.2	B	9.5	11.0	15.1	
9.5		30.0	36.8		9.0	23.1	33.3		9.5	57.8	42.8		9.3	21 6.6	46.5	B	9.4	11.0	32.4	
9.3		39.2	21.0		9.5	25.8	40.7		9.1	13 5.8	10.6	K	9.2	7.1	12.0	B	7.9	14.1	42.7	L
9.5		42.1	30.1		8.7	26.6	48.1		9.5	17.9	55.3		9.4	17.6	17.8		8.5	14.6	23.4	L
9.2		50.8	32.3		9.5	31.9	39.5		9.5	18.2	36.8		8.5	21.0	36.9	K	8.9	17.8	51.8	
9.5		55.1	25.9		6.8	43.1	25.9	K	9.4	18.6	9.1	B	9.1	24.9	8.3		8.4	20.1	43.6	L
9.1		55.6	11.1		8.8	50.2	18.5		9.5	29.2	0.3	B	9.1	36.8	24.4		9.5	24.9	3.3	
9.3	55	13.0	28.3		9.0	58.7	7.8	K	9.5	33.5	15.0		7.5	37.6	37.0	K	9.5	29.2	55.7	
7.9		13.2	36.9	K	7.5	5 3.0	21.0	K	9.1	35.4	20.6	K	9.5	51.2	59.5		9.4	35.5	28.3	
9.0		17.3	45.5		9.2	4.1	45.7		8.7	36.9	46.4	R	8.9	56.1	55.5		9.4	47.4	33.4	
9.5		32.5	40.3		9.5	18.0	44.7		9.1	39.2	23.9	B	9.4	22 2.9	31.0		9.5	55.5	15.8	
9.3		37.9	30.3		9.5	24.3	19.9		8.8	52.1	14.8		9.2	3.7	3.9		9.5	29 0.7	3.6	
8.2		56.3	12.9	B	9.5	27.0	43.7		9.5	59.6	54.6		9.3	3.8	29.2	B	8.8	14.3	24.7	
8.0	56	3.1	25.4	K	9.5	35.8	18.0		9.2	14 14.5	7.7		9.3	7.4	57.0		9.4	28.0	57.8	
9.5		24.8	6.6		9.2	46.5	47.7		8.6	20.1	41.5	K	8.9	11.2	45.9	K	9.5	42.9	4.7	
9.5		45.0	26.0		8.8	46.7	38.6	K	9.2	29.2	15.3		9.5	12.2	34.9		9.5	48.3	32.3	
9.5		48.8	0.6		9.2	6 16.0	48.1		8.8	34.3	4.5		9.5	26.5	13.8		9.3	50.1	55.0	
9.5	57	10.0	54.9		9.2	30.1	34.6	B	7.3	37.6	15.9	S	9.5	33.1	31.3		8.3	50.1	18.5	
9.5		17.3	55.0		9.3	35.5	31.1		9.3	39.0	46.3	K	9.1	34.7	55.5	K	8.0	53.1	23.1	L
9.5		19.7	9.0		9.4	43.6	42.6		9.5	15 7.5	42.7	K	9.5	44.0	30.5		9.4	30 0.2	7.6	
8.9		47.5	4.1		9.0	47.1	28.0	R	8.5	14.1	55.0	K	9.5	49.8	2.2		9.5	1.8	56.5	
9.3		58.1	25.3		9.4	48.7	11.0		9.3	20.3	5.6		8.7	50.9	2.7	K	9.5	22.6	12.8	
9.3	58	9.6	4.3		9.0	53.0	18.9		9.3	25.8	4.3		9.5	55.1	29.8	B	8.9	23.1	17.7	
9.1		13.3	45.8		8.7	55.1	55.6		9.4	27.4	24.5		8.7	23 6.8	0.6	K	9.0	26.2	58.2	
7.7		28.8	32.1	S	9.4	55.6	8.9		9.2	31.6	17.8		8.7	8.1	40.3		8.8	31.0	25.1	

4601—4660				4661—4720				4721—4780				4781—4840				4841—4900			
	21ˢ	+35°			21ˢ—22ˢ	+35°			22ˢ	+35°			22ˢ	+35°			22ˢ	+35°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
9.5	33	25.0	11.9	9.2	46	41.5	58.5	9.0	4	14.4	31.7	9.5	16	0.3	11.2	8.6	29	14.4	27.6
9.5		54.2	25.7	9.5		47.3	52.3	9.5		16.3	1.0	9.4		7.1	37.5	9.1		16.9	6.1
8.0	34	9.5	46.4	K 9.1	47	6.2	48.3	9.5		18.0	22.1	9.2		14.7	28.1	8.9		29.6	44.5
9.0		25.9	20.8	7.2		11.4	27.2	K 9.5		30.3	49.0	B 8.8		16.0	47.1	L 9.5		47.7	59.9
9.5		48.5	34.0	B 9.0		13.5	13.8	7.0		51.1	33.9	K 6.5		25.2	56.2	L 9.4		54.7	6.5
9.2		58.1	46.9	B 9.0		22.3	44.1	9.5		51.1	27.8	9.4		36.5	59.5	9.5	30	18.9	54.7 B
9.2	35	4.3	34.5	9.5		23.3	4.2	9.5	5	6.6	3.1	9.4		50.4	59.8	8.8		40.8	23.2
9.4		22.4	50.7	9.4		24.4	26.1	B 9.4		18.9	28.0	9.2	17	11.4	31.3	9.2		50.0	6.8
9.5		37.1	32.5	8.8		24.5	9.0	9.0		32.7	16.6	K 9.3		37.1	2.6	9.4		57.8	6.6
9.5		43.1	15.0	7.8		51.7	53.7	K 9.5		33.4	20.1	9.5	18	1.6	27.3	8.3	31	14.0	55.2 K
9.4		52.1	8.0	8.8		57.4	29.1	K 9.5	6	0.8	4.1	9.5		45.3	54.5	9.5		47.2	48.9
9.5	36	0.4	22.6	9.5	48	37.2	44.8	8.9		7.5	24.6	9.4		48.0	1.2	9.5		49.8	20.6
9.5		24.8	0.5	9.5	49	1.5	44.8	9.4		8.4	38.7	9.5		49.0	38.2	8.9		56.3	9.1 K
9.1		39.1	37.3	B 9.0		1.8	42.0	9.5		19.7	39.2	9.4		55.7	26.4	9.0	32	13.7	39.6
9.5		50.4	48.6	6.5		11.4	27.9	K 9.3		20.1	5.2	9.5	19	5.1	55.5	9.0		17.5	54.2 K
8.0		52.9	21.0	K 9.1		36.2	13.2	9.5		27.0	33.8	9.1		12.9	59.9	9.4		29.8	16.7
9.3	37	0.6	43.8	9.1		40.0	16.5	9.3		43.1	15.3	9.3		20.7	10.3	9.2		45.6	23.8
9.2		50.0	39.0	9.4		48.0	42.7	9.3		50.9	15.3	9.4		49.6	11.6	8.8	33	11.2	26.5
9.0		57.1	23.5	9.3	50	28.9	18.9	9.4		53.0	42.4	9.5		57.4	24.9	9.4		12.5	55.5 B
9.5	38	28.1	17.0	8.3		40.4	27.6	K 8.9	7	3.0	57.0	K 9.5	20	2.3	38.5	9.5		14.5	58.5
8.6		48.1	32.6	K 9.4	51	23.4	38.0	B 9.4		11.3	48.8	9.1		15.1	55.0	9.5		25.6	3.3
9.2	39	14.0	56.7	9.5		33.5	34.3	9.5		30.4	35.5	9.5		37.9	54.0	9.3		55.3	37.9
9.5		28.6	27.6	8.3	52	18.0	24.5	9.2		32.5	59.9	9.4		39.5	39.2	8.8		57.4	26.9
9.5		30.8	58.7	8.0		29.6	59.6	K 9.1		40.2	24.4	9.1		41.7	19.9	6.5	34	29.3	30.6
9.5		35.5	42.0	9.4		56.0	19.6	9.4		47.7	16.2	9.0		46.0	14.7	9.1	35	11.8	20.2 K
6.6		36.4	11.6	L 9.4		58.0	11.5	7.7	8	24.3	26.1	L 9.5		54.6	54.7	9.4		51.1	47.2
9.5		42.4	58.2	9.5	53	8.2	54.2	9.4		58.5	2.7	9.5	21	7.4	8.4	8.5	36	39.6	1.5 K
9.5		47.7	5.6	9.4		27.8	35.9	9.3	9	4.8	20.0	9.3		20.8	56.7	9.4		43.2	59.9
8.6		54.3	46.0	9.5	54	1.3	48.3	9.4		9.2	22.5	9.5		30.0	53.5	9.5		54.3	39.2
9.5		58.9	47.8	8.8		40.8	48.6	K 8.8		13.4	42.0	9.5		32.1	22.1	9.2	37	2.5	7.3
9.5	40	6.3	43.8	8.9		46.9	16.5	K 9.2		39.3	29.6	9.5		51.9	36.2	9.3		24.2	19.8 B
9.5		15.0	43.1	7.8	55	4.8	44.9	K 9.3	10	6.8	54.0	9.5	22	40.0	0.9	9.5		44.7	9.6
8.7		25.6	48.9	9.5		39.6	0.2	9.4		31.7	59.7	8.8		52.1	39.4	8.8		49.1	32.1 K
9.5		28.9	57.0	9.4		45.8	38.0	9.5		36.5	1.5	9.4		55.9	20.1	8.1	38	29.3	34.8 K
9.1		29.6	15.3	9.3		59.8	56.9	9.5		37.8	57.5	7.5	23	7.2	12.0	K 8.7		34.0	10.3
8.9		40.1	16.0	8.9	56	36.2	56.6	8.7	11	23.3	12.0	K 8.9		13.7	46.6	9.3	39	1.0	36.3
9.1		46.0	28.7	9.0		37.1	41.5	9.3		27.5	7.1	8.8		25.5	28.3	9.5		3.8	54.1
9.1		59.0	59.9	9.4	57	3.3	50.3	9.5		42.9	52.5	8.8		28.6	35.8	9.2		5.9	35.2 B
9.5	41	15.6	21.5	8.5		51.3	3.2	K 9.5		54.6	39.4	9.5		39.3	56.8	9.2	40	9.3	19.2
9.4		35.7	22.7	9.3	58	27.9	43.5	B 9.1		57.0	44.5	9.4	24	6.1	53.4	9.0		26.8	25.0 B
9.4		46.0	26.2	9.0		36.2	7.6	9.5	12	9.8	12.5	9.5		13.2	54.0	9.3		35.3	36.8
8.9		59.5	46.5	K 9.4		42.9	26.2	9.4		17.7	50.3	8.8		18.6	15.9	K 9.5	41	17.5	1.8
6.7	42	2.1	54.5	K 7.3	59	18.8	42.1	K 9.5		45.0	17.6	9.5		26.5	3.5	9.2		24.5	20.6
9.5		9.7	0.8	8.5		22.9	11.5	K 9.5		53.1	9.0	9.5		39.4	52.4	9.0		45.9	40.6
9.1	43	0.4	33.8	9.5		27.7	56.6	B 9.5	13	5.2	51.5	8.8		43.9	10.6	K 9.5	42	2.1	38.6
9.5		12.3	56.8	9.2		47.5	9.0	K 9.3		8.1	16.2	9.4		51.8	35.2	9.5		6.2	55.1
8.0		27.6	26.6	K 9.2		54.7	4.0	9.4		12.9	17.7	9.5		57.5	57.5	9.5		13.8	16.1
9.4		34.0	9.6	9.5		54.9	33.9	8.2		59.1	34.8	K 9.5	25	18.0	49.0	9.0		16.9	7.3
9.5		42.0	10.8	9.5		58.7	56.4	9.5	14	1.3	6.4	9.4		29.9	0.7	9.5		46.3	43.7
9.5		42.5	5.3	9.4		59.5	48.0	9.4		16.5	23.4	9.3		37.5	58.6	9.3		52.5	35.8
9.5		58.3	44.2	9.4	0	31.7	53.4	9.4		17.5	48.1	9.2		39.2	6.3	K 8.5		59.4	46.1
9.4	44	0.7	0.2	7.0		45.3	23.9	K 9.4		44.2	0.3	9.5		42.0	0.4	9.2	43	17.9	3.3
9.5		11.2	5.6	9.4	1	17.8	49.7	8.7		50.0	42.4	9.3		51.5	6.6	K 7.8		34.0	56.0 K
9.5		15.3	8.9	9.5		29.5	15.2	9.5		56.3	19.7	9.5		58.1	36.6	9.5		40.2	12.4
9.3		25.5	7.6	B 9.5		51.0	16.3	9.4	15	24.7	9.0	9.4	26	18.6	27.0	9.5		45.7	19.4
9.3		32.3	40.7	9.1	2	18.2	9.9	8.3		28.3	43.8	L 8.7		57.7	56.6	9.4		50.9	43.1
9.5		42.8	54.0	9.5		26.3	55.6	9.4		33.6	49.4	B 8.4	27	17.4	7.7	K 9.0		57.3	23.4
9.0	45	3.2	26.9	8.7	3	12.6	43.8	K 9.5		42.2	26.3	8.9		43.3	13.5	9.3	44	7.0	13.7 B
9.3		52.5	2.6	9.5		27.5	56.6	9.5		52.4	48.9	9.5	28	32.2	23.4	9.5		14.3	19.5
9.4	46	3.3	44.5	9.5	4	13.2	27.9	9.5		57.8	12.7	B 8.3	29	5.6	36.8	8.0		47.8	44.7 K

Zone +36°

1—40					41—80					81—120					121—160					161—200				
	0u		+36°			0u		+36°			0u		+36°			0u		+36°			0u—1u		+36°	
m	°	′ ″	′		m	°	′ ″	′		m	°	′ ″	′		m	°	′ ″	′		m	°	′ ″	′	
7.3	0	14.6	22.3	K	9.5	14	44.9	58.3		8.8	25	11.7	50.6		9.2	38	8.8	5.4	K	7.9	49	35.1	37.3	L
8.8		35.0	27.9	K	9.2		55.0	26.2		8.2		34.1	23.2	K	9.3		37.7	58.4		9.3		45.9	35.1	
9.5	1	19.1	30.3		9.5	15	34.8	18.3		9.1		35.9	42.7		9.3		58.3	13.8	K	9.2		50.5	38.4	B
8.3		22.7	23.4	K	9.5		41.5	9.9		9.4		55.8	22.0		8.7	39	23.2	28.9	K	7.3	50	1.6	42.9	L
9.5		45.4	58.9		8.1		54.6	37.8	K	9.2	26	19.5	26.2		9.3		44.1	8.9		9.2		9.4	18.7	K
9.5		54.4	53.5		9.5		56.4	21.5		9.0	27	3.7	43.0		8.5		47.2	50.4	K	9.3		13.7	21.5	K
9.2	2	18.6	42.7		8.6	16	7.3	5.9		6.6		24.5	1.9	K	8.6	40	3.0	6.9		9.3		33.6	28.5	
7.5	3	16.0	40.3	K	9.3		31.4	4.4		9.4	28	13.9	20.4		9.4		49.5	18.5		8.7		43.8	24.1	K
8.9	4	22.0	13.7	K	9.5		46.0	29.6		8.8		19.7	48.6		9.5	41	3.5	44.7		9.3		58.0	25.7	B
8.5		41.6	36.1		8.9		47.1	52.3		8.8		22.3	53.8		9.3		19.1	4.4		8.5	51	10.2	3.1	
9.4	5	15.1	33.3		9.5	17	30.2	17.8		9.1		27.6	49.1		8.9		21.0	6.1	K	9.0		17.2	56.7	
6.8		18.5	53.6	L	9.5		41.5	35.8		8.9		36.1	17.2		9.4		26.2	55.5		9.5		23.6	6.8	
7.9		32.6	36.5	L	9.5	18	26.3	47.5		9.0		44.0	36.0		9.0	42	22.0	19.5		8.7		26.2	58.9	K
9.0	6	18.7	2.4	K	9.0		31.5	49.7	B	9.3	29	2.9	43.4		9.1		28.0	58.5	B	8.7		30.5	54.0	K
9.5		51.5	27.9		8.8		39.4	30.4	K	9.4		31.7	6.4		9.3		30.7	0.5		9.5		51.4	6.5	
9.3		58.3	43.8		9.4		42.2	37.8		9.5		38.4	26.6		9.3		38.1	57.4		9.4	52	26.4	33.1	B
9.1	7	5.1	20.7	K	9.2	19	14.3	28.9	K	9.5		55.8	58.8		9.5		41.7	1.6		9.2		52.0	18.2	B
9.5	8	11.1	28.4		9.2	20	1.5	47.7		9.5	30	18.4	47.4		9.5	43	6.2	40.7		9.4		58.3	13.2	
9.4		44.2	28.3		9.5		1.7	30.1		9.4		18.7	57.1		9.5		14.0	8.8		9.3	53	28.4	49.0	
9.5		47.2	56.1		9.3		42.2	44.2		8.5		25.6	49 9	B	7.9		25.2	14.2	L	9.2		49.8	36.0	
9.4	9	4.2	58.5		9.3		48.3	46.2		8 5		30.2	16.1	L	8.9		48.1	28.6	K	9.1	54	15.5	28.0	
9.5		14.9	1.2		8.0		58.8	30.1	K	9.2		48.9	54.9		9.1	44	11.3	5.1		8.6		20.7	24.2	K
9.2		31.1	36.0		9.5	21	6.0	47.4		9.5		55.5	57.1		9.2		30.4	36.2		9.3		55.4	28.0	
8.3		39.4	15.5		9.4		10.9	11.1		9.4		58.2	3.3		9.4		45.2	8.8		9.5	55	9.8	58.5	
8.7	10	7.1	44.2		9.1		11.3	28.9	K	9.2	31	13.2	30.0		8.6		59.5	9.1		7.8		27.5	3.6	K
9.0		15.4	16.5		6.3		15.2	6.7	K	9.5	32	48.0	38.9		9.5	45	2.1	5.4		9.3		51.6	57.0	
9.3		41.2	55.8		9.5		28.6	32.1		9.5		52.5	19.4		8.6		31.2	24.4	K	8.2		56.9	2.6	L
9.4	11	14.3	52.8		9.0		38.1	37.8		9.3	33	17.6	40.9		6.5		32.2	37.5	K	8.8	56	0.1	40.2	K
8.7		26.5	1.7	K	8.9		46.4	41.0		9.4		45.2	26.6		9.3	46	1.4	24.5	K	9.3		30.8	54.0	
9.4		37.2	53.8		8.7	22	3.0	2.2	K	9.5	34	25.9	43.8		9.5		2.8	15.9		8.8		52.1	2.6	K
9.5		57.1	11.6		9.5		24.3	53.0		9.1		41.8	58.0	K	9.5		14.1	4.4		9.4		56.6	1.4	B
7.3	12	11.4	9.4	K	9.2		26.2	6.4		8.4		43.5	25.6	K	9.5		32.3	3.7		9.5		59.6	5.7	
9.4		42.2	52.4		9.4		43.5	56.0		9.5	35	21.1	36.3		9.5		52.4	14.2		9.2	57	4.3	3.4	B
9.4		57.1	44.7		9.5	23	41.9	0.9		8.0	36	1.2	45.9	K	8.7	47	55.1	48.5	L	9.4	58	41.9	34.3	
9.5	13	19.0	8.4		8.7		54.4	27.7		9.2		18.5	56.1		9.3	48	0.4	32.8		9.1	0	39.3	24.9	
9.5		41.6	33.6		9.5	24	3.1	4.0		9.5		37.1	17.1		9.3	49	4.1	11.7	B	9.2	1	44.0	17.4	
8.4		58.7	36.8		7.9		6.2	9.9	K	7.8	37	18.5	35.3	K	9.3		10.2	4.2		9.2	2	9.4	58.5	K
9.5	14	1.8	33.3		9.4		17.4	30.4		8.8		30.2	58.3	K	9.4		10.4	24.1		9.4		28.5	41.8	B
7.4		38.2	57.2	K	8.7		40.4	56.8		9.4		38.9	14.1		9.4		29.5	51.2		9.5		44.3	46.3	
9.4		41.4	16.4		9.5		55.5	33.8		9.1	38	4.0	20.3		8.0		33.1	16.8	K	9.0		50.7	58.3	B

201—260				261—320				321—380				381—440				441—500			
	1ᵘ		+36°		1ᵘ		+36°		1ᵘ		+36°		1ᵘ—2ᵘ	+36°			2ᵘ	+36°	
m				m				m				m				m			
6.0	3′	2.4	57.0	K	9.1	21′	7.8	25.6		9.4	41′	28.9	37.5		9.4	50′	54.1	22.5		9.3	5′	39.1	36.5	K
9.4		42.4	40.3	B	9.2		35.8	16.2		9.5		35.1	6.2	B	9.5	51	5.0	46.2		9.5		49.6	9.0	
9.3	4	34.2	42.8	B	9.5		44.7	52.4		9.2		35.8	37.7		8.1		23.0	1.9	L	9.5	6	15.9	34.8	
8.5		38.6	13.6	K	9.5		53.3	49.2		9.5		51.4	52.2		8.0		38.5	56.0	K	9.5		17.2	56.4	
9.0		49.8	54.8		9.5	22	22.0	51.9		9.5	42	20.6	2.4		9.3		45.6	24.8		9.5		59.0	43.6	
9.5		50.0	47.5		9.5		55.4	10.4		7.8		30.7	50.6	K	9.0		48.2	11.3	K	7.8	7	11.2	5.7	B
9.5	5	0.6	26.5		9.5	23	3.8	43.6		8.9		49.0	3.3		9.5	52	9.0	49.6		8.5		21.8	0.8	L
9 5		13.8	0.7		9.5		11.8	57.4		8.7		58.0	52.4	B	9.5		9.9	29.4		9.5		35.4	36.5	
8.7		41.5	53.7	L	8.3		32.0	48.0	K	9.4	43	2.3	48.2	B	9.5		14.8	14.6		9.5		43.2	58.8	
9.5		50.1	36.9		9.5		37.9	1.0		9.4		5.2	52.6		9.4	53	17.0	56.7	B	8.8		45.8	28.7	
9.4	7	1.3	4.6		9.5	24	14.0	49.5		9.5		43.6	27.9		7.9		35.7	1.5	K	8.6		48.3	25.5	
8.2		19.9	58.3	K	9.2		19.5	29.7		6.8		51.8	42.9	L	9.4		39.9	2.2	B	9.5	8	21.1	8 3	
9.1		32.6	25.0		9.5		45.0	9.6	B	9.2		54.7	38.4		8.9		42.0	38.7		8.2		25.4	49.1	S
9.2		54.0	19.8		8.8		54.4	25.9		9.3	44	23.5	6.4		8.0		52.6	48.0	K	9.5		47.0	16.3	
9.5	8	41.5	10.8		9.0	25	15.1	7.4	K	9.5		27.2	52.8		9.5	54	9.5	2.4		9.4		55.3	24.8	
9.2	9	29.6	38.3	K	8.9		30.2	35.7	L	8.8		30.0	24.5	K	9.4		30.9	32.8		9.4	9	16.9	37.1	B
9.5		47.0	57.1		6.2		55.1	29 7	K	8.6		31.9	30.9	K	8.7		33.2	55.4	K	9.5		40.1	48.0	
9.5	10	8.1	44.6		8.8	26	29.0	58.8	K	7.2		40.3	36.2	K	9.5	55	8.1	27.0	B	7.5		51.1	24.0	L
9.5		32.2	50.0		9.4		31.4	52.6	B	9.1		56.7	58.4		9.3		47.4	32.4		9.5	10	8.6	35.6	
6.5		35.8	37.6	K	9.1		34.1	18.9	B	9.5	45	35.2	9.3		8.3	56	41.9	0.8	K	9.4		40.3	59.9	B
9.5		37.0	7.1		9.5		40.0	27.2		9.3		46.4	25.6		8.5		50.1	20.3	K	9.3	11	6.5	42.2	
9.3	11	7.7	37.2		9.5	27	7.0	8.8		9.5		48.7	51.9		9.0	57	0.3	15.9	S	9.5		47.4	14.5	
9.5		24.3	56.8		9.2		16.7	3.4		9.3		54.6	30.6	B	9.1		1.6	9.7		9.1		58.7	33.2	K
8.7	12	3.9	55.4		9.3		23.0	15.9		8.9	46	1.8	16.2		9.4		7.2	45.9		7.2	12	14.0	23.9	K
9.5		4.8	8.9		8.0		47.8	52.5	L	9.0		21.7	43.8	K	9 5		36.0	32.4		8.0		25.4	44.5	K
9.5		30 0	37.9		8.5	28	5.2	42.0	L	6.4		25.9	24.4	L	9.1		45.4	26.8		9.0	13	6.1	32.7	K
9.5	13	14.6	56.8		9.3		48.1	55.4		9.5		39.6	6.6		8.9		51.5	5.2		9.5		20.6	45.5	
9.5		38.8	44.4		9.3		49.5	39.1		9.3		53.1	50.8		8.9		54.6	20.4	K	9.5	14	6.0	5.8	
9.1		56.1	27.2		9.5	29	8.3	34.7		9.2	47	4.1	32.9		9.3	58	9.6	52.7		9.5		8.6	58.5	
8.9	14	8.0	33.3		9.3		45.0	21.1		8.8		7.6	55.3	R	8.8		11.7	55.8	K	8.4		29.3	53.7	K
9.1		25.0	42.0		9.1		47.2	29.4	K	9.2		12.3	59.5		9.5		27.8	2.5		9.4		30.1	58.1	
9.0		40.4	17.1	K	9.5		48.1	1.2		9.5		12.5	46.4		8.5		28.0	20.0	K	9.4		37.7	2.4	
9.0		47.7	6.7	K	9.5	30	4.4	40.8		9.1		21.0	46.4		9.2	59	19.0	34.4	K	8.5		52.9	27.8	
9.5	15	9.0	31.2		8.8		18.1	14.2		5.8		21.0	34.0	L	9.4		32.4	41.0		9.3		56.2	23.5	
8.8		14.3	46.0		9.5		27.7	10.1		5.8		34.1	32.6	L	8.5		38.2	19.7	K	9.5	15	14.5	56.7	
9.0		18.9	24.7	K	8.5		48.4	4.1	L	9.5		39.0	56.5		9.0		47.5	3.3		9.4	16	3.5	17.0	
6.0		22.8	58.0	L	9.1		59.2	44.3		9.3		43.3	54.8		9.5	0	19.2	3.1		9.0		25.5	51.4	
8.9		38.2	37.5	K	9.3	31	24.8	18.9		9.0		46.1	53.4		8.7		46.5	13.2	L	7.2		26.3	27.5	K
9.3		43.7	57.1		9.5	32	39.6	12.1		9.4	48	13.4	46.2		9.0		53.1	3.5		8.8		33.6	39.1	
8.0		56.5	46.2	B	9.3	33	33.0	59.8		9.4		16.0	44.8		7.7		56.1	25.6	L	9.4		35.2	3.5	
7.3	16	8.6	7.5	B	9.5	34	4.1	23.3		9.3		20.5	57.0		8.7	1	23.2	6.1	B	8.5		40.3	7.7	L
9.1		10.4	57.7		8.9	35	15.6	20.9	K	8.5		22.8	23.0	L	9.2		31.0	59.0		7.5	17	0.6	20.8	K
9.5		19.9	4.5		9.5		31.8	15.1		9.4		41.0	43.5		9.5		38.2	57.0		9.1		1.1	57.3	K
7.8		42.5	42.5	K	9.5		49.1	2.5		9.5		50.0	59.9		9.4		39.2	2.8		9.5		4.6	41.5	
8.1		44.7	57.6	K	6.5		55.9	56.3	K	9.4		52.5	41.7		9.5		41.4	10.1		8.3		6.3	33.1	L
9.5		58.9	16.1		6.8	36	12.0	13.4	L	9.2		54.4	26.2		8.8		55.5	59 6		9.5		16.6	0.8	
9.5	17	11.1	11.6	B	9.5		47.7	56.9		9.3	49	1.5	46.9	B	7.8	2	44.3	41.0	K	9.0		38.0	45.1	
9.5		22.3	42.1		8.8	37	8.6	25.4		9.1		2.0	57.1	K	8.5	3	12.1	17.0	K	8.8		42.4	56.9	K
9.4		36.0	31.2		9.5		29.0	26.8		8.1		5.4	3.5	K	9.3		15.5	24.1		7.9		59.5	53.4	K
9.5	18	8.0	36.7		9.1		48.8	29.9		8.1		7.5	57.7	K	9.5		21.6	0.5		8.1	18	0.2	18.1	K
8.8		14.5	43.9		9.2	38	8.5	57.9	K	9.5		19.4	40.5		9.5		28.3	2.0	B	7.7		25.6	18.2	K
8.3		35.2	33.2		9.5		59.0	18.0		9.1		22.1	59.0		9.5		31.9	57.6		9.5		27.0	11.3	
7.5		36.6	44.4	B	8.9	39	22.9	52.0		9.5		25.8	57.6		8.2		33.6	41.8	K	9.3		43.5	49.2	K
9.5		51.4	8.7		9.3		35.3	45.3	B	9.5		26.4	47.3		8.8		56.1	38.5	K	9.5		52.5	15.9	
9.5	19	21.4	55.2		9.1		54.0	6.4		9.5		26.5	3.3		8.4	4	2.5	41.1	K	8.3	19	36.5	17.7	K
9.4		28.0	19.8		9.5	40	29.4	33.9		9.5		55.9	4.4		9.3		19.6	58.1	B	9.1		36.9	56.3	
9.0		37.9	16.1	K	9.3		36.2	54.4		9.3	50	14.9	37.4		9.5		25.4	39.4		9.5		52.7	15.6	
8.7		50.8	51.8	K	9.2		53.7	45.2		8.0		15.5	58.9	K	9.3		27.6	10.7	B	8.5		56.8	23.6	K
7.3	20	8.3	19.7	K	9.3	41	0.6	7.3		9.4		15.5	48.2		9.5		35.4	7.2		6.5	20	15.6	41.7	K
9.1		31.5	43.5		8.6		13.7	42.3	K	8.5		21.4	26.7	K	8.6	5	10.6	56.5	K	9.5		50.4	10.5	

501—560				561—620				621—680				681—740				741—800			
	2ᵘ	+36°			2ᵘ	+36°			2ᵘ—3ᵘ	+36°			3ᵘ	+36°			3ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	21 18.6	28.8		9.5	39 52.5	37.6		9.5	52 52.4	57.5		9.3	11 36.7	16.8		8.4	34 39.4	24.8	B
9.4	28.1	8.2		9.3	57.6	0.8	B	9.4	53 4.1	33.1		9.5	12 7.5	30.2		5.5	35 10.0	0.3	K
9.5	53.1	53.7		9.4	40 6.6	54.3	B	9.5	54 12.8	58.4		9.5	13 2.7	30.8		9.2	13.2	4.1	B
9.5	22 11.7	13.8		9.5	10.8	59.9		8.8	24.9	48.0		8.5	31.8	29.9	B	9.5	34.0	15.9	
9.5	18.6	33.6		9.5	11.4	14.0		8.5	45.9	49.4		9.5	14 15.2	35.2		9.5	36.4	19.0	
7.5	34.6	49.2	K	6.5	25.8	42.5	K	9.1	55 4.6	24.1		9.4	50.7	33.8		9.5	47.3	56.0	
8.9	44.8	31.4	K	8.0	34.6	11.6	K	9.4	56 19.4	45.2		8.5	15 0.5	43.9		9.5	36 14.6	15.2	
9.5	23 23.5	45.7		8.9	38.1	44.8	K	6.5	28.1	13.4	K	9.0	44.2	15.7		9.5	35.4	6.9	
9.5	35.0	51.3		6.5	41 34.1	21.3	K	9.1	54.4	14.8		8.0	17 6.7	29.3	L	8.3	37 2.1	41.8	K
9.2	51.0	19.3		9.3	35.9	27.4	B	9.5	57 5.6	1.1		9.5	48.4	9.4		9.5	11.4	58.4	
9.1	56.6	2.2		9.2	42.1	32.3		8.4	58 18.7	2.6	K	9.5	18 6.5	50.9		9.5	14.1	29.8	B
7.2	24 1.0	41.4	K	9.3	44.3	43.6		7.0	29.6	4.0	K	9.5	21.7	48.5		9.5	38.0	36.3	
9.5	28.1	25.8		9.5	52.1	6.4		9.3	35.2	31.7		9.5	49.4	12.4		9.5	57.1	1.9	
9.3	28.6	8.1		8.6	42 11.4	30.7	L	8.9	36.3	17.9	K	8.9	19 21.2	20.6		9.5	38 22.4	0.4	
9.1	31.4	34.9		9.1	24.7	10.4		9.3	50.7	44.8		8.4	21.7	36.6	L	9.2	39 36.5	58.1	
9.5	49.8	24.8		9.5	41.8	1.6		9.5	59 21.4	12.7		8.8	20 8.0	9.1	R	9.1	39.8	41.1	
9.5	26 7.8	1.3		8.5	48.9	50.1		8.9	36.7	44.2	B	8.0	34.7	55.3	K	9.4	49.0	51.6	
9.1	38.8	21.9	B	9.1	49.3	17.5		8.0	38.1	29.3	K	7.2	55.0	8.1	K	9.2	50.2	58.8	
6.0	43.4	41.1	K	9.3	56.6	56.4	B	8.6	47.5	51.6	K	9.5	21 37.6	39.0	B	9.5	40 14.5	50.7	
9.2	55.9	56.3		9.2	43 4.3	25.3	B	6.9	0 18.2	44.2	K	9.4	41.0	59.8		9.3	38.7	9.6	B
7.0	27 1.1	26.9	K	9.0	5.1	41.7	S	9.5	24.4	22.5		9.5	46.0	37.0		9.3	39.7	30.0	B
9.4	36.9	0.0		7.0	8.9	29.3	K	9.3	35.2	26.3	B	9.3	47.8	52.8		9.0	41 45.9	54.8	
9.0	52.7	47.0	K	9.5	16.1	41.4		8.3	51.4	4.0		9.4	48.2	51.0		8.5	51.5	45.8	K
8.3	28 0.0	43.6	K	9.0	33.7	55.2	K	9.3	1 12.2	42.8		9.5	48.3	40.0		8.7	56.9	59.9	K
8.8	10.1	57.9	K	8.4	42.4	51.1	K	8.8	15.5	1.6		9.5	53.3	49.6		9.4	42 4.1	38.0	
9.1	29 2.0	23.8		9.3	51.8	44.2		9.1	17.7	20.7		9.5	22 0.2	7.7		8.8	17.1	25.6	
9.0	16.3	53.1	K	9.3	56.5	54.2	K	9.5	2 4.8	22.0		9.2	6.4	52.0		9.5	37.2	13.8	
9.4	25.5	49.8	B	9.1	44 40.5	6.5		9.5	34.1	4.7		9.4	8.6	56.5	B	8.6	49.6	4.5	L
9.2	53.9	51.3		9.1	54.1	2.6		9.4	57.9	1.4		9.5	18.0	37.5		8.9	43 27.1	24.6	
9.5	30 28.6	29.7		8.9	45 7.8	47.0		6.7	58.4	39.3	S	8.6	20.8	49.4	K	8.3	51.6	23.1	B
9.4	47.1	43.8		9.3	12.4	43.4	B	8.6	3 8.5	26.5	K	9.5	27.7	50.6	B	9.5	44 0.5	55.8	
9.5	49.0	50.8		9.0	14.9	3.2	K	8.0	18.1	34.7	L	8.5	31.2	28.6		8.8	27.8	32.5	
9.5	31 6.6	1.5		9.5	22.4	39.5		9.4	24.2	40.0		8.2	34.0	58.7	B	9.5	47.6	50.2	
9.1	44.1	26.9	K	9.5	55.3	46.7		9.4	32.0	42.5	B	9.5	38.5	50.8	B	8.6	52.1	15.9	K
9.2	32 1.8	20.2	B	9.5	56.7	34.2		8.1	44.8	43.9	K	9.4	41.4	51.6		8.5	45 13.3	18.6	K
9.0	33 21.5	39.8	K	8.3	58.9	8.2	B	8.8	4 16.9	6.5	B	9.0	50.1	53.1	B	9.4	35.4	48.1	
9.2	26.0	14.0		9.5	46 14.7	22.4		9.1	27.8	29.3		9.2	23 30.0	29.2		9.5	47.1	2.8	
9.4	33.6	35.2		9.0	23.8	30.6		9.5	27.9	5.0		9.3	32.7	46.7		9.5	58.7	35.6	
9.5	35.4	54.2		8.9	32.4	31.4	K	9.5	30.1	16.1		9.5	33.2	57.2		8.4	46 1.3	8.9	K
9.3	43.1	31.1		9.5	51.8	34.5		8.8	32.1	57.9		9.5	35.5	32.3		9.5	12.0	34.3	
7.8	54.8	34.4	L	8.6	53.4	22.4		9.5	48.8	46.0		9.5	59.5	13.4	B	9.5	22.5	59.3	
9.4	56.2	6.0		9.5	47 9.8	5.6	B	9.3	5 14.9	58.2		9.5	24 4.7	11.4		9.1	31.6	15.5	K
8.0	34 19.8	17.3	K	9.5	13.1	42.8		9.5	41.8	18.2		9.3	34.8	13.6	B	9.5	36.1	8.2	
9.5	30.1	6.0		9.5	17.9	45.9		7.0	59.1	43.1	K	8.4	34.9	30.2		9.5	41.4	35.3	B
9.2	35 7.3	53.0	B	9.5	27.2	5.5	B	9.1	6 33.6	33.5		9.5	25 20.2	17.1		9.5	55.6	17.3	
9.1	8.8	23.6	K	9.4	48 14.5	14.1		7.5	36.0	8.6	L	9.3	26 54.2	49.5		8.6	47 4.8	43.9	K
9.5	49.4	9.3		9.3	22.3	43.8		9.1	46.1	28.2	B	9.2	57.4	2.2		9.1	9.4	50.7	
9.4	53.1	49.6	B	9.4	24.7	28.0	B	9.2	51.4	21.4		9.4	27 11.5	57.0		9.0	44.4	36.0	
9.5	36 21.2	41.4		9.1	50 23.6	32.8		8.3	7 4.5	4.2	K	9.5	20.8	27.1	B	9.3	47.6	31.0	
9.4	22.0	54.1	B	9.0	53.7	51.1	K	9.2	12.4	46.2		9.5	46.8	40.8	B	8.8	50.5	9.4	L
9.5	25.1	14.5		9.4	51 6.7	36.5	B	9.3	44.2	22.8		8.8	59.2	45.7	K	9.0	48 1.1	28.3	
9.1	57.4	35.2		9.5	11.7	36.6		9.0	8 59.5	17.3		7.0	28 34.9	57.0	K	7.0	8.6	3.8	K
9.5	37 30.1	8.4		9.5	12.4	43.8	B	9.1	9 26.0	18.1	B	9.3	30 7.2	33.8		7.5	22.5	11.9	K
9.5	44.4	46.7		9.4	17.6	39.8		9.3	37.9	18.7		9.4	31 49.4	40.4		9.3	22.7	51.1	B
9.5	38 6.6	4.0	B	9.5	23.7	42.8		9.3	10 8.8	42.6		8.9	32 52.3	48.6	K	9.0	36.1	6.8	L
9.0	35.9	52.2	B	9.5	35.7	40.5		8.0	14.6	20.9	K	9.1	33 0.8	2.0		8.4	49 8.8	42.9	K
9.2	37.1	39.7		9.3	52 0.4	52.8		9.3	46.0	43.6		9.5	25.2	39.7		9.5	57.4	8.0	
9.4	46.2	27.9		9.5	11.2	53.2		9.2	11 8.7	8.9	K	9.0	34.2	29.6		8.5	50 19.8	23.5	
9.2	39 0.2	56.9	B	9.5	42.1	22.4		9.3	13.5	18.4	B	8.7	52.5	23.0		9.4	19.9	52.6	
9.4	29.6	17.5		9.5	44.5	50.4		9.5	36.1	3.2		9.5	57.2	9.9		9.3	28.4	18.0	

801—860					861—920					921—980					981—1040					1041—1100				
	3ᵘ—4ᵘ		+36°			4ᵘ		+36°			4ᵘ		+36°			4ᵘ—5ᵘ		+36°			5ᵘ		+36°	
m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′	
9.3		51 15.9	43.5		9.5		7 22.5	48.4		9.2		29 38.5	13.9		9.5		52 16.2	23.3		9.4		3 25.0	26.6	
9.0		39.0	6.6		9.2		28.8	54.4	K	9.5		52.5	34.5		9.5		19.7	49.5		9.3		31.5	47.1	
9.5		39.1	19.7		8.8	8	9.7	14.6		9.4	30	19.4	7.1		9.0		48.3	30.2		9.4		32.6	36.5	
8.5		42.8	43.2		9.2		31.9	6.1	K	7.5	31	3.0	34.8	K	9.4		51.2	34.3		9.5		37.5	56.3	
7.5		45.0	35.6	K	9.5		49.8	48.8		9.5		23.0	59.0		9.5	53	19.3	39.5		9.0		37.5	4.6	
9.3	52	35.1	24.3		7.5		55.4	30.5	K	7.2	33	0.0	1.1	K	9.5		22.0	11.6		9.5		56.3	33.0	
9.5		43.0	46.1		8.5	9	55.4	47.4	K	8.1	34	8.8	46.8	K	9.2		24.7	3.6		7.0	4	1.6	51.3	K
8.8		51.7	2.0		8.4	10	7.8	22.5	L	9.4		24.6	3.3		9.1		33.0	4.8		9.5		13.7	54.2	
9.5		55.9	55.4		9.4		28.0	1.4		9.5		58.8	22.5		9.5		39.6	36.0		7.7		15.5	44.6	K
7.0	53	38.4	42.9	L	9.1		28.3	43.3		8.6	35	25.8	59.6	K	9.5	54	9.4	17.6		9.3		32.0	6.3	
8.9	54	33.1	32.8		9.3		35.1	12.1		8.9		35.5	6.2		8.8		11.5	45.0		9.5		32.5	38.4	
9.2	55	9.2	6.8		7.7		35.2	50.7	B	8.8	36	2.3	30.6		8.8		13.3	37.6		9.4		47.9	20.4	
7.8		26.4	41.4	L	9.1		37.4	6.8		8.8		19.9	1.1		8.5		14.4	30.7	K	9.5		48.0	56.3	
8.8		27.1	20.0		9.5		58.2	9.0		8.6	37	3.4	58.8	K	9.5		38.2	55.4		9.5		48.4	23.6	
9.5	56	0.0	9.3		9.5	11	6.7	16.6		8.8		19.3	28.3		9.3		41.1	12.7		9.5	5	13.8	19.0	
9.1		35.4	55.5	K	7.3		24.6	14.2	K	9.2		24.0	56.9		9.5		59.6	33.2		9.2		18.7	19.2	
9.3	57	16.1	22.5		9.5		30.0	5.1		7.5	38	5.8	27.2	L	9.5	55	14.7	55.2		9.4		34.0	38.7	
7.7		40.0	53.2	K	9.4	12	35.1	13.8		8.7		40.2	53.4	K	9.5		52.2	38.1		9.5		45.5	25.8	
9.5		47.1	4.8		9.5		37.7	58.7		9.5	39	20.8	20.2		9.4	56	30.1	25.0		9.5	6	4.2	18.6	
9.5		49.8	24.6		7.0		50.8	33.9	K	9.2		51.3	19.0		8.5		35.1	19.7		8.8		5.7	33.0	
9.5	58	6.0	10.8		9.5	13	6.1	21.5		9.4	40	29.6	28.8		9.5		56.4	10.1		9.5		14.6	23.6	
9.4		9.9	29.5		9.5		29.5	3.1		9.0		58.1	11.6		9.3	57	20.0	25.7		9.0		22.5	47.6	
8.8		14.6	43.9	K	8.7	14	10.4	12.4	K	8.9	41	10.3	33.8		9.3		23.3	38.8		9.5		38.0	7.4	
8.4		33.4	21.7	L	9.5	15	16.3	58.1		9.3		21.4	25.1		8.8		38.4	40.1	K	9.5		38.3	38.5	
8.3		34.8	34.2		9.5		31.8	49.8		9.1		22.9	39.5		9.4		40.5	45.0		9.5		45.0	24.7	
9.1		37.8	12.1	L	9.5		34.2	3.6		8.4	42	17.3	53.1		9.5		43.6	3.9		8.8		49.7	54.9	K
9.3		55.0	51.8		9.4		52.0	7.1		9.4		30.8	50.5		9.5		48.7	8.7		8.7	7	3.8	16.9	
9.0	59	12.6	31.8		7.8		52.4	55.8	K	7.4		38.2	22.1	L	9.4		58.8	16.6		9.5		21.6	10.2	
7.7		41.9	2.3	B	7.3	16	2.8	20.0	K	8.6		45.3	14.1	K	9.0	58	15.2	51.2	B	9.5		22.4	23.5	
9.5		50.4	7.6		9.5		5.1	58.8		9.3		47.9	9.3		9.2		17.5	47.3		9.5		31.8	16.6	
9.3		54.3	59.4		9.5		38.0	48.4		9.4		54.7	48.7		9.5		23.9	13.3		9.2		43.9	4.3	
9.2		55.5	21.8		9.3	17	11.5	48.0		5.0		56.1	27.9	L	9.0		26.1	48.0		8.9	8	6.8	56.7	
9.5	0	21.8	44.6		9.4		21.1	52.1		9.5	43	7.1	11.4		9.5		38.4	1.6		7.3		35.1	28.2	L
9.3		32.7	25.6		9.0		37.4	54.3	K	8.8		26.6	6.8	K	9.4		56.6	13.3	B	9.4		45.9	58.6	
8.9		33.6	15.1		6.5		43.7	12.1	K	9.5		32.8	19.6		9.5		59.7	54.7		9.4		55.6	9.2	
9.4		44.7	58.5		9.5	18	41.8	40.5		9.2		46.5	58.2		9.3	59	14.1	28.3		8.8	9	1.3	37.3	
8.5	1	0.1	8.3	K	9.5	19	20.0	27.7		6.5		50.6	34.7	K	9.4		18.0	12.7		9.5		6.8	44.5	
9.5		8.1	54.7		9.5		25.7	53.3		7.5	44	13.3	32.0	K	9.5		22.9	23.6		7.9		12.5	2.5	K
9.5		20.4	37.4		9.4	21	2.6	26.3		9.2		19.0	6.7		9.5		45.6	2.3		9.4		24.9	24.1	
9.2		52.8	27.7		8.8		37.0	50.4	K	9.4		54.7	10.0		9.5	0	6.6	50.8		9.3		42.0	28.0	
9.5	2	7.7	2.2		9.4	22	1.7	20.0		8.9		59.2	38.4	K	7.8		9.1	48.8	K	9.4		54.3	38.2	
8.3		30.8	22.8	K	9.3		10.8	21.7	B	9.0	45	13.8	38.4		9.4		9.7	56.4		8.4		54.5	47.1	
9.4		39.1	23.5		6.5		19.6	26.7	L	9.5		30.1	8.7		9.0		11.0	6.3		8.8	10	1.9	3.4	K
8.2		43.4	25.9	K	9.0		23.0	4.1	K	9.5	46	23.1	54.9		9.3		18.2	4.6		9.5		13.7	52.1	
8.9		47.5	30.6	B	9.3		27.2	14.0		9.5	47	25.3	7.3		8.2		24.8	20.2		9.5		22.6	10.5	
8.7		56.9	41.2	K	8.7		32.9	10.5	K	9.2	48	21.9	13.7		8.5		46.2	39.6		7.5		24.1	31.0	L
9.5	3	9.1	49.7		6.5		37.4	43.6	L	9.5		41.6	3.2		8.4		51.9	34.9		9.5		38.0	54.2	
9.5		19.8	1.4		9.5		50.5	12.1		9.3		52.0	10.4		9.0	1	0.6	10.2		9.2		40.6	42.2	
9.5		23.2	18.7		9.0	23	16.0	56.5		9.5	49	42.0	14.4		9.5		1.0	57.0		9.5		42.2	51.5	
9.5		30.4	48.2		8.6		16.8	26.5	B	9.5		56.4	42.7		9.0		4.6	10.0		8.2		45.8	29.4	K
9.5	4	8.6	27.7		8.9	24	19.1	22.5	K	9.5	50	7.3	45.5		9.5		5.2	12.5		9.5		52.3	2.9	
9.3		20.5	34.3		9.5		29.7	31.9		9.0		19.0	20.6	K	9.4		8.3	35.4		9.4		58.6	48.8	
9.3		32.3	2.7		8.5	26	23.6	21.4		9.4		38.5	7.3		9.5		21.9	31.7		9.5		59.0	15.0	
9.5		40.6	11.9		6.5		58.8	39.1	L	9.5		49.2	52.7		9.3	2	4.0	46.6		9.5	11	7.2	33.5	
9.0		47.4	24.7	B	9.1	27	39.0	59.7		7.5		49.4	24.6	K	9.0		4.5	56.4		9.5		14.8	58.2	
9.2		55.4	23.6		8.5		47.4	4.3	K	9.5	51	11.0	12.0		9.5		10.4	35.4		9.5		33.0	27.3	
6.8	5	26.0	8.2	K	8.5	28	27.3	0.2		8.9		14.7	33.2	K	9.2		10.4	31.0		9.5		39.3	38.4	
9.3	6	33.2	55.7		7.0	29	21.8	15.5	K	9.0		19.1	1.9	B	9.3		16.9	1.9		9.5	12	5.6	9.3	
8.0		46.5	22.4	K	8.5		33.1	49.2	K	9.2		42.6	59.6	B	9.4		35.2	32.5		9.0		6.4	22.4	K
7.5	7	1.0	8.9	L	8.5		37.4	33.2	K	9.5	52	14.5	1.2		9.2		53.5	45.4		7.7		27.4	3.3	L

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵘ	+36°			5ᵘ	+36°			5ᵘ	+36°			5ᵘ	+36°			5ᵘ—6ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.9	12 27.7	53.8		8.8	20 25.9	58.8		9.1	29 45.4	40.1		9.3	43 45.2	33.0		8.8	53 33.3	23.6	K
9.0	47.6	9.7		9.5	46.1	30.3		9.5	59.6	5.0		6.9	51.0	5.3	K	9.4	46.4	2.2	
9.0	50.7	12.9		9.5	21 0.9	14.3		9.5	30 30.9	54.2		9.5	44 2.1	38.2	B	8.9	58.5	25.3	K
8.8	51.0	24.3		9.4	13.7	18.0		9.3	40.1	38.2		9.4	6.5	11.5		8.7	54 22.1	3.7	
9.1	13 1.9	35.2		8.5	13.8	7.7		9.4	47.6	7.6		9.4	8.0	7.1		9.5	40.3	9.8	
9.3	5.5	47.1		9.5	18.0	25.2		9.5	53.1	41.8		9.3	10.4	52.5		9.5	53.4	49.0	
9.5	10.7	24.8		7.8	36.4	39.9	L	9.5	57.4	22.1		9.4	18.8	55.7		9.5	57.6	46.1	
9.4	11.0	10.2		8.9	22 6.3	39.1		9.5	31 37.1	58.7		9.4	20.6	11.7		9.0	55 33.6	22.3	K
9.5	36.5	30.7		9.4	41.3	18.9		8.7	44.9	21.9	K	8.3	37.1	29.3	K	8.8	53.8	56.2	L
9.5	41.2	19.9		9.5	49.2	27.0		9.2	45.8	36.5		8.5	54.9	20.4		9.5	57.5	10.5	
9.4	48.9	10.0		8.8	49.6	0.2		9.3	32 28.6	49.5		9.3	45 4.0	47.3		9.5	56 1.4	6.2	B
8.7	55.3	37.9	K	9.4	57.5	7.9		9.4	39.7	43.1		7.3	5.7	13.0	L	8.7	3.9	27.8	K
6.8	14 5.7	15.1	K	8.6	23 6.1	42.3		8.0	44.7	7.2	B	9.5	9.8	24.1		9.1	13.5	1.6	
9.5	6.4	42.3		7.0	6.2	12.7	L	9.3	50.9	12.7		9.5	28.4	30.4		9.3	20.0	35.4	
9.4	23.3	50.3		9.5	26.8	19.6		9.2	54.6	5.2		8.8	33.5	45.6		9.4	24.0	2.1	
9.5	29.7	53.7		9.1	50.0	37.4		8.3	55.3	4.4		9.1	57.9	33.2		9.0	24.6	37.8	
9.5	32.4	3.1		7.7	54.9	21.6	K	9.3	59.5	45.8		7.3	46 0.8	54.1	K	9.0	35.8	22.2	K
9.4	32.5	5.3		9.2	56.6	8.8		9.5	33 31.2	9.2		9.4	4.0	21.5		9.3	57 17.7	22.5	
9.2	38.0	5.6		9.5	24 28.6	1.3		8.8	44.8	19.3	K	9.5	12.9	23.1		9.4	29.7	32.7	
9.5	40.7	17.9		9.5	39.0	25.2		9.2	34 1.1	51.2		9.1	26.5	7.0		6.8	38.8	16.1	L
9.5	53.9	39.9		9.4	39.5	17.9		9.5	11.0	30.2		7.5	34.7	51.2	K	8.7	52.5	37.6	
6.8	59.4	3.6	K	9.5	50.8	57.4		9.5	20.0	9.3		9.5	39.4	42.1		9.4	54.8	42.8	
9.1	15 3.7	54.7		9.4	51.7	6.7		9.5	20.3	15.7		9.5	53.6	28.6		9.3	58 3.2	14.4	
9.1	4.3	55.7		9.3	25 6.9	47.5		9.5	49.7	10.8		8.5	58.0	6.6		7.4	8.1	4.6	L
9.5	9.4	9.2		9.5	22.6	47.6		9.5	35 22.5	5.6		9.5	47 10.4	28.2		9.3	48.5	24.6	
9.4	21.5	45.8		9.4	35.0	52.5		9.5	48.4	27.8		9.3	15.5	23.4		9.5	53.5	32.2	
9.5	30.0	25.8		9.5	40.9	0.2		9.3	36 3.4	14.2		8.8	20.3	46.3		7.7	59 4.5	41.4	K
9.5	36.0	25.3		9.5	43.1	28.3		9.5	19.7	53.0		8.3	23.4	21.6		9.5	21.7	5.3	
9.5	40.3	36.7		9.3	54.8	48.4		9.3	38.0	18.0		9.5	48 0.4	26.6		9.0	27.5	53.7	K
9.5	46.8	58.7		9.3	55.0	26.6		9.5	46.6	10.2		9.5	9.4	2.1		9.5	30.2	19.0	
9.5	16 0.1	55.0		8.1	26 2.6	55.9		9.2	49.5	24.3		9.4	13.7	3.2		9.0	52.7	12.2	
9.1	11.3	19.2		8.3	5.4	0.6		9.2	51.2	33.0		9.1	15.0	43.9		9.2	56.1	2.5	
9.5	22.6	49.9		9.1	13.0	8.4		9.5	56.9	22.4		9.5	17.3	12.1		9.5	0 35.3	48.3	
9.5	30.4	42.9		8.8	21.2	32.5		9.5	37 10.5	47.6		9.2	17.5	44.1		9.5	39.1	17.6	
9.5	35.8	50.3		8.7	23.1	31.0		8.6	11.2	1.6	K	9.5	31.7	9.4		9.1	41.8	47.3	B
9.2	40.5	1.6		8.3	24.6	8.8	K	9.4	23.4	14.9		8.5	45.1	21.0	K	9.5	56.1	50.3	
9.4	57.4	3.8		9.4	35.4	8.2		9.5	29.7	34.7		9.2	49 3.9	14.5		9.5	1 5.8	19.1	
9.5	17 4.1	58.5		8.5	37.8	17.6		8.8	30.2	53.5	K	8.9	6.3	29.5		9.5	35.4	57.1	
9.4	11.5	25.1		9.3	45.3	39.2		8.6	34.9	36.7		9.5	8.1	53.0		9.5	44.5	3.8	
8.8	21.9	22.6	K	8.8	57.5	1.2		8.9	38 35.6	31.5		9.5	31.8	19.7		8.5	2 28.2	9.6	
8.9	40.0	42.6		9.3	58.0	2.6		8.2	41.6	10.0		9.5	41.3	8.7		9.5	37.1	46.5	
9.5	53.7	55.0		8.1	27 13.9	57.2	K	9.5	39 7.4	10.0		7.9	48.9	48.8	K	9.4	47.8	1.1	
9.5	53.8	8.3		9.4	28.3	36.9		9.3	25.3	19.7		9.5	51.8	40.4		9.5	3 3.0	48.8	
9.2	18 1.0	24.6	K	7.7	42.4	59.7	K	8.0	38.0	7.9	K	8.0	50 0.5	1.7	K	9.5	9.5	18.1	
9.2	13.9	58.1		9.5	28 5.7	40.2		9.4	41.8	58.1		9.2	8.4	58.5		8.5	4 1.3	38.7	K
9.5	18.5	46.3		9.4	27.2	1.5		8.9	43.7	1.8	K	9.5	28.4	42.5		9.2	38.8	32.5	K
9.2	19.2	53.2	K	9.2	27.4	2.3		9.5	40 7.9	3.9		9.1	41.1	51.4		9.0	5 35.5	23.4	
9.5	26.3	38.3		9.5	30.0	41.6		9.5	9.5	42.8		9.5	51 13.2	36.0		6.6	53.3	11.5	K
8.8	41.3	38.2	K	9.5	34.5	50.9		9.5	35.0	29.5		9.4	15.2	38.1		9.3	6 15.2	12.4	
9.3	57.2	34.7		9.5	37.9	37.5		9.4	44.4	41.6		9.5	19.3	3.7		9.3	57.9	0.3	
9.4	19 13.8	38.9		9.5	39.8	22.9		9.5	41 3.2	33.0		9.5	34.4	34.0		9.1	7 7.9	23.5	K
8.9	32.2	34.2	K	9.2	39.9	56.8		9.3	9.0	45.6		7.8	49.1	30.5	S	9.4	28.4	5.8	
9.5	44.5	44.5		9.5	40.2	40.6		9.4	9.6	8.1		9.5	52.2	41.7		9.1	30 5	56.0	K
9.5	46.5	43.8		9.5	41.5	55.2		9.5	23.7	23.6		9.5	52 37.0	14.5		9.4	32.0	13.0	
9.5	50.9	22.6		8.9	29 1.4	4.3		9.0	43.3	32.2		9.0	41.6	18.5	K	9.1	34.1	21.3	B
9.5	55.3	40.5		9.3	2.3	59.0		9.0	42 39.2	15.2	K	9.0	45.3	20.4	K	9.2	38.1	25.5	
9.1	20 3.9	50.6		9 3	20.0	37 9		9.3	44.7	13.7		9.0	54.0	52.4	K	9.4	8 12.9	9.4	
9.3	4.7	54.7		9.2	35.9	23.6		9.5	43 6.6	11.2		9.4	53 10.9	57.0		9.4	41.8	2.9	
9.3	7.8	55.7		9.3	36.4	25.6		9.5	11.1	21.1		8.2	15.7	31.7	K	9.2	57.3	35.9	
9.2	22.0	38.2		9.5	38.9	32.0		9.4	28.8	20.1		9.3	31.0	12.2		9.4	9 1.4	58.0	B

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ		+36°		6ᵘ		+36°		6ᵘ—7ᵘ		+36°		7ᵘ		+36°		7ᵘ		+36°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	9	36.4	13.9	B	9.5	25	4.0	49.6	B	9.1	43	57.8	17.3	B	9.4	2	24.4	6.3		8.1	22	38.8	26.8	K
8.6	10	13.0	16.3	L	9.3		14.4	35.1		9.5	44	5.6	27.8		7.8		37.6	21.7	K	9.4		50.4	36.8	
9.5		17.8	16.6		9.5	26	2.5	27.7		9.1		11.6	42.4		9.1	3	0.7	54.1	K	9.2		52.1	1.0	B
9.5		43.7	13.2		9.1		28.6	35.4		9.2		13.9	19.3		9.0		19.0	49.5		9.5	23	21.6	6.8	
9.5		59.6	14.9		8.6		32.9	57.0	K	9.4		33.8	15.0		9.5		59.0	10.8		7.9		44.5	6.3	K
8.3	11	5.3	37.9		8.9		51.8	53.2		9.5		33.9	24.0		9.5	4	11.2	29.6		9.0	24	11.8	18.1	K
7.8		13.4	22.7	K	9.3		58.2	11.1		9.5	46	14.7	14.4		9.5		19.3	48.1		9.5		52.7	6.0	
9.1		53.4	10.1	S	8.8	27	16.4	41.8		8.5		21.8	54.8	K	9.4		33.8	18.0		9.5	25	24.0	21.7	
8.7		54.8	8.0	S	9.3		31.3	28.6		9.1		33.7	6.7		9.5	5	34.5	14.8		9.5		40.8	19.1	
9.4	12	22.9	19.8	B	9.1	28	9.8	13.1		9.3		37.7	12.9		8.8		51.2	46.5	K	9.5		53.9	16.6	
9.5		44.6	3.9		8.2	29	32.4	47.7	K	9.3		46.6	22.6		9.5	7	3.8	40.6		9.4	26	14.8	7.7	
8.6	13	4.3	8.4		8.8		49.9	40.4		9.2	47	0.3	45.8		9.1		35.8	46.8	K	9.4		20.0	36.3	
9.5		13.1	14.2		9.3	30	5.0	38.4		9.3		12.0	40.8		7.7		40.6	15.4	K	8.8	27	3.9	14.8	
9.5		16.9	42.8		9.3		44.8	11.7		9.4		32.7	38.5		9.1	8	2.6	47.6	K	9.3		7.4	27.4	
9.3		20.0	3.6		9.5		52.1	11.0		9.5	48	46.3	10.7	B	9.0		23.8	37.2		9.5		47.3	20.7	
9.1		21.0	8.4		9.5	31	8.4	52.5		9.5		58.5	49.1		9.5		24.3	42.8		9.5	28	10.1	30.0	
9.0		56.1	5.5		9.2		13.5	41.5		9.5	49	16.2	14.6		7.8	9	40.1	56.2	K	9.2		21.5	50.6	
9.5	14	20.9	8.3		9.3		25.5	17.3	B	9.5		17.9	4.6		9.2		59.4	19.7	K	9.4		35.0	51.5	
9.0		33.0	2.9		9.5		26.7	36.9		8.7		26.3	58.6		8.5	10	6.9	35.2	K	8.7	29	35.2	10.5	K
9.4		43.0	10.2		8.7		38.9	10.6	R	9.3		46.8	2.2		9.5		8.6	47.5		9.5	30	8.4	17.5	
9.3		49.8	29.7		9.4		49.5	13.8		9.4		58.5	46.0	B	9.5		30.9	14.1		9.4		18.5	3.8	
8.0	15	8.5	6.6	B	6.5		55.3	4.7	K	9.5	50	12.0	48.0		9.5		38.1	41.6		9.2		32.6	37.2	K
8.8		23.0	9.6		9.0	32	26.1	32.8		9.5		16.9	42.7		9.5	11	12.0	6.8		9.5	31	6.2	4.9	
9.4		38.3	36.7		8.9		45.9	21.0	R	9.2		42.5	41.0		9.4		19.6	50.5		9.2		52.0	17.1	
9.5		55.1	30.6		8.8		57.3	45.0		9.1		53.5	58.6		9.3		21.4	27.5	B	9.1		57.8	40.5	
9.5	16	9.9	18.8		8.5	33	10.3	18.3	K	9.5	51	12.1	57.5		9.4		22.7	59.4		9.5	32	27.6	37.2	
9.0		14.0	29.8		9.5		19.4	39.3		9.5		26.7	33.5		9.3		58.5	9.1		8.9		31.4	3.9	
9.1		14.5	47.6		9.3		26.8	54.6	B	9.1		32.6	2.5	K	8.8	12	10.6	20.7	K	9.3		51.6	9.2	
9.5		37.5	54.0		9.5		26.8	50.8		9.1		33.5	25.8		9.5		28.5	27.9		9.4	33	1.1	30.3	B
8.4	17	14.6	16.6	K	8.5		33.0	28.2	K	9.5	52	56.6	4.5		9.3		37.9	22.4		8.4		10.9	55.7	K
9.5		24.8	2.6		9.5		59.2	46.0		9.0	53	7.2	43.6	K	9.5		52.2	10.1		9.1		36.8	0.6	
9.2		40.7	59.7		9.5	34	13.5	6.2		9.3		36.1	27.3		9.3	13	9.7	54.1	B	9.5		55.8	48.0	B
9.3		49.1	25.0		8.7		28.3	18.2	K	9.5		43.4	46.1		9.1		16.9	49.0	B	9.5	34	19.0	22.8	B
9.2	18	0.7	37.5		6.7		28.9	14.4	K	9.3		44.9	35.7	B	9.5		19.0	4.7		9.1	35	8.0	51.1	
8.7		10.5	42.9		8.8	35	21.5	3.5	R	7.0	54	20.3	31.1	L	9.5		22.6	39.7		8.5		9.6	10.8	K
7.7		13.8	17.5	K	9.1	36	4.9	14.1		9.1		40.3	3.9		9.2		25.0	43.7	B	9.5		38.7	37.3	
9.1		21.8	27.8		8.5		10.4	9.9	K	7.8	55	0.0	49.0	K	9.5		37.2	34.8		8.2	36	22.4	19.4	K
9.2		25.5	51.8	K	9.3		25.7	35.3		9.5		20.3	32.1		9.5		37.8	46.7		9.5	37	30.3	37.3	B
8.4		23.8	8.5	L	9.4		36.0	51.5	B	9.1		41.5	33.6		9.4	14	16.2	10.8		9.4		50.6	24.8	
9.5		41.0	3.7		9.2		46.8	1.3		9.4		59.9	4.2		9.3		33.4	26.7		9.4		53.1	26.8	
9.0		45.8	43.7		8.3	37	8.0	32.4	K	9.5	56	7.0	22.6		7.5		37.5	35.2	L	9.4	38	0.7	41.7	
7.4	19	1.4	34.9	K	8.8		25.3	50.9	K	8.8		10.8	15.7	K	9.5	16	6.7	24.8		9.5		22.9	4.5	
9.5		24.3	32.8		9.5		46.1	39.8		7.4		13.8	46.6	L	9.4	17	9.1	36.3		9.3		35.0	52.2	
9.5		41.6	9.2		7.3		49.7	48.2	K	9.3	57	4.3	59.9	K	9.5		14.2	58.5		9.5		38.8	6.5	
9.4		54.0	3.7		9.3	38	25.8	14.4	R	9.3		5.5	4.5		9.5		45.4	4.2		9.2		40.9	36.7	E
8.0		57.1	42.0	L	8.6		52.2	18.8	R	9.5		21.7	22.2		9.5		57.6	45.3		8.1		52.3	58.9	E
9.3	20	16.8	37.9		9.5	39	7.7	13.6		8.3	58	21.8	5.2	K	9.4	18	0.4	4.0	B	9.0		54.9	58.2	E
9.0		54.4	55.9	K	9.1		41.8	48.6	K	9.5		34.1	30.3	B	9.5		26.8	2.9		9.2	39	48.5	3.8	
9.2	21	5.2	37.3	B	8.6		48.4	37.0	K	8.4	59	10.8	7.3	K	9.5		31.6	43.8		9.4		51.9	25.7	B
8.8		56.8	23.8		8.8		59.0	33.4	K	9.4		17.1	57.3		9.2		52.6	24.9	B	9.5	40	26.1	25.0	
8.9	22	11.5	8.8		8.4	40	27.7	34.3	K	6.8		42.0	48.6	K	9.2		54.9	55.5		9.2	41	13.8	46.5	
7.8		13.9	42.3	L	9.1		32.0	32.3	K	8.8	0	17.5	4.3		9.5	19	31.3	21.5		9.3		45.7	9.1	
8.9		28.8	27.9		9.3		43.6	56.2		9.5		51.0	48.9		9.3	20	9.2	37.8		9.2		59.8	37.2	
9.3		51.9	6.2		9.5	41	11.5	20.9	B	9.0		52.7	17.7	K	9.5		32.6	54.7		9.4	42	19.5	13.7	B
9.5	23	15.9	1.7		9.5		18.4	39.1		9.2	1	7.6	46.8		9.2		35.9	9.3		9.5		20.6	18.0	
9.5		41.8	50.1		9.2		42.6	53.7	K	9.0		8.9	50.4	K	9.1	21	48.0	23.8		7.0		36.9	32.4	K
9.5	24	5.8	32.7		9.0	42	4.5	3.7		9.4		28.0	9.9		9.5		49.5	35.7		7.4		42.9	38.0	K
8.8		7.0	41.1		9.5		21.3	5.2		9.3		30.6	16.2		9.5	22	22.4	31.7	B	9.3	43	5.6	33.8	
9.4		25.9	49.6	B	9.4	43	39.4	8.1	B	9.5		36.8	34.1		8.4		26.7	50.4	K	9.2		8.7	54.4	
9.5		31.2	23.1		9.5		43.1	2.2		9.4		41.6	9.2	B	9.5		36.6	2.0		9.3		20.1	14.0	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ᵘ—8ᵘ	+36°			8ᵘ	+36°			8ᵘ	+36°			8ᵘ—9ᵘ	+36°			9ᵘ	+36°	
m		′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	43 52.0	4.7		9.4	2 34.8	3.8		9.3	17 26.1	38.1		9.0	43 32.8	42.3		8.6	7 37.1	15.2	
9.5	44 6.7	34.0		9.3	3 18.7	26.8		9.3	31.4	5.7		9.1	42.9	3.0		9.0	8 25.3	29.6	K
9.4	6.8	11.5		8.4	45.3	8.6		7.8	59.4	17.6	K	6.1	44 46.7	5.6	L	7.7	10 1.3	17.6	K
9.5	9.3	46.7		9.4	4 10.0	34.5		8.5	18 13.0	34.5	K	9.4	45 9.3	0.7		9.5	30.5	54.7	
9.5	35.5	51.5		9.4	15.1	45.3		7.5	32.7	36.0	K	9.2	9.9	11.0		9.5	35.4	49.6	
9.5	36.7	9.3		9.4	46.3	46.3		6.9	45.8	22.0	K	9.3	55.8	13.7		9.1	11 16.8	14.6	K
9.3	45 20.8	16.1		9.5	59.6	5.8		8.0	50.3	24.6	K	9.5	46 17.0	52.0		9.4	12 0.4	21.7	B
9.4	21.8	45.2		9.5	5 3.5	27.6		8.2	51.5	51.9	L	7.8	46.1	44.1	K	9.0	23.5	21.8	B
9.5	53.1	20.6		8.2	21.8	55.9	K	9.4	20 11.1	3.4		6.7	49 19.9	21.6	K	9.1	57.2	4.0	
9.4	46 2.9	5.5	B	9.4	24.6	53.7	B	9.3	11.8	46.0		9.5	50 27.3	9.5		8.0	13 17.7	11.8	L
8.0	4.0	52.8	K	9.1	27.9	1.5		8.4	21 37.2	23.5	K	9.5	27.7	33.9		8.6	14 32.3	41.1	K
8.5	6.0	20.3	K	9.5	30.4	25.5		8.3	22 32.3	52.5	K	9.5	36.0	40.5	B	8.2	15 6.0	21.5	B
9.2	15.3	32.1		9.5	6 17.0	38.1		8.5	38.6	5.1		9.5	44.5	4.1		8.7	11.0	8.9	K
8.6	17.1	22.0	K	8.9	18.0	46.6		8.9	23 23.6	11.8		9.5	51 4.6	59.4		9.5	18.1	2.3	
9.3	40.2	15.6		8.6	24.2	23.0	K	8.8	59.2	22.6		9.5	35.7	58.8		8.7	22.8	50.0	K
9.5	47 3.3	14.7		9.5	31.1	16.3		6.3	24 3.8	55.5	K	9.5	45.3	17.1		9.5	35.9	5.7	
7.7	10.9	55.9	K	9.3	31.2	29.6		7.8	17.7	17.1	K	7.8	52 37.3	24.7	K	9.1	49.4	27.6	K
9.3	11.2	17.2		9.3	57.0	38.2		9.5	27 5	2.7	B	8.9	45.3	28.1		9.0	16 22.1	2.2	
9.1	26.2	49.6		9.4	7 13.5	9.6		9.5	25 10.1	29.0		9.4	53 7.4	31.6		9.5	29.3	46.6	
9.0	28.5	42.7		9.5	18.7	54.5		5.9	25.4	54.7	K	9.4	54 14.0	59.6	B	8.5	17 23.8	20.1	K
9.4	49 1.5	13.5		9.3	42.3	26.3		9.3	27 14.5	26.0	B	9.5	30.1	7.5		9.5	18 20.5	7.5	
9.4	30.9	20.0		9.1	8 5.9	49.9		9.5	20.4	13.1		9.5	37.2	13.0	B	9.4	19 27.1	11.5	
9.3	38.7	56.4	B	9.4	7.9	48.7		9.5	20.7	34.7	B	9.0	55 4.5	55.3	K	8.6	38.0	47.2	K
9.5	59.5	5.9		9.5	24.5	28.7		9.2	28.9	11.7		8.8	7.4	53.3	K	9.2	45.3	53.6	B
8.6	50 22.5	41.7	K	7.3	27.5	10.4	K	9.5	32.5	38.0		6.8	56 28.3	45.5	K	9.1	20 55.3	15.1	K
6.8	22.8	28.2	K	8.8	9 27.2	31.4		9.2	53.8	58.4		9.1	37.9	42.0		9.5	21 53.0	47.0	B
9.4	29.1	12.6		8.9	38.9	39.3		9.5	28 21.6	12.0		9.4	52.1	24.7		8.5	57.2	50.6	K
9.4	51 2.3	25.0		9.5	56.3	39.6		9.5	34.0	22.0		8.8	54.9	58.6	K	9.5	22 31.9	1.2	
9.4	45.6	37.4		9.5	10 0.7	2.3		9.2	29 31.4	50.2		9.5	57 21.8	11.7		9.4	23 2.3	25.1	
9.4	52 42.5	11.3		9.4	33.5	55.1		7.2	30 13.2	1.4	K	9.2	42.3	54.0	K	9.3	4.0	58.5	B
8.0	52.2	17.6	K	8.4	40.0	18.1		9.0	14.8	9.8		9.5	51.1	21.3	B	9.1	12.0	9.2	
9.0	53 9.8	33.7		9.0	52.1	15.0		9.5	28.0	54.7		9.4	58 24.8	59.0		9.1	24 16.2	41.6	K
8.7	21.7	28.8		9.4	11 5.2	27.9		9.5	30.7	4.8		9.2	28.8	49.3	K	9.2	25 0.0	58.1	B
9.4	43.9	38.4	B	7.3	26.5	13.9	K	9.5	35.5	54.6		9.5	37.2	12.5		8.9	21.0	59.9	K
7.0	54 10.8	45.1	K	9.3	43.3	25.7		9.5	31 11.9	6.7		9.4	59 1.8	21.2		9.1	22.9	53.6	
9.2	20.7	4.7		8.5	55.9	46.2	K	8.9	43.7	14.6		7.3	24.7	53.9	K	9.2	36.8	42.1	
9.2	27.9	2.3		9.0	12 7.2	32.1		8.0	50.8	41.9	L	8.5	43.0	10.5		8.9	26 38.6	55.2	K
9.0	53.8	2.2		9.0	14.4	42.7		7.9	57.0	28.6	K	9.5	0 16.8	25.2		9.4	51.3	8.2	
9.4	56 11.6	2.8		8.6	26.2	30.7	K	9.4	32 30.7	21.0		9.3	20.9	50.1		5.5	57.6	28.6	K
7.0	33.8	42.4	K	9.4	29.6	3.5		8.5	52.0	58.8		8.7	43.3	58.2	K	9.4	58.7	11.8	
9.0	57.9	58.0	K	8.5	45.2	35.4	K	9.0	33 36.8	33.0		9.2	56.8	44.1	K	8.0	27 49.3	21.1	K
9.4	57 21.4	23.5	B	9.4	46.1	36.4		9.0	54.2	26.5		9.1	1 2.7	9.5		7.7	28 5.2	15.4	K
9.3	36.6	2.2		9.5	50.6	58.6		7.3	34 16.7	52.2	K	9.3	46.6	13.1		9.0	29 22.8	28.1	K
9.5	58 17.5	10.8		9.4	13 28.9	0.7		8.8	35 47.8	22.0		8.9	2 17.8	30.6	K	9.5	54.4	8.2	
7.7	18.8	3.3	K	9.5	40.0	1.2		9.0	36 27.9	6.3		8.9	32.8	13.8	K	8.7	30 51.3	33.6	K
7.7	20.7	39.4	K	9.4	46.6	1.6	B	8.8	36.6	23.0	K	8.9	34.9	52.5	B	9.5	58.6	53.9	
8.9	26.8	13.0		9.2	48.2	12.5		9.5	37.0	27.9		9.4	40.5	49.3		8.5	31 17.8	24.2	
9.4	32.1	54.1		8.3	14 23.0	46.9	K	9.5	48.7	17.5	B	9.3	47.7	42.8		9.2	32 15.0	9.5	K
8.6	33.9	27.1	K	9.3	28.4	50.9		9.5	37 57.9	9.1		9.5	49.9	54.5		8.8	33 16.0	6.9	K
9.3	34.0	57.1	B	9.5	39.5	13.8		8.7	38 8.7	58.7	K	7.8	54.7	4.9	L	9.5	55.7	8.8	
9.3	59 27.4	59.1		9.5	48.3	54.1		9.4	27.3	12.5		9.4	3 16.9	33.4		9.5	36 17.0	59.6	
7.2	0 14.5	7.9	L	9.5	15 39.3	26.4		9.5	39 37.4	43.8		8.3	21.8	57.6	K	8.9	30.3	23.2	K
9.5	16.9	42.5		9.5	16 1.5	9.7		9.5	56.1	40.8		9.2	55.0	6.9		8.7	38 14.0	1.2	K
9.3	30.4	41.2	B	7.9	17.9	58.3	K	8.4	41 19.5	39.8	L	9.5	4 0.0	29.7		9.0	39 50.6	52.0	
9.5	51.9	30.8		9.2	22.5	11.4		9.5	26.5	15.6		9.5	5.5	32.7		8.8	40 4.8	23.6	K
9.5	1 11.2	41.3		9.5	27.9	24.6	B	9.4	34.8	5.6		9.0	5 19.8	20.2		9.5	14.8	22.1	
8.6	25.8	20.1	B	9.2	38.7	45.5		9.5	47.4	32.8		9.0	6 2.3	21.6		9.4	18.8	17.6	
9.5	32.3	10.4		9.3	45.8	36.3		9.0	43 3.8	41.0		8.5	17.3	29.1	K	9.1	29.6	58.5	K
9.5	59.0	12.9		9.1	17 3.6	27.7		8.2	7.1	49.2	K	7.8	34.8	35.1	K	9.0	37.5	10.8	K
9.2	2 9.4	56.0		8.8	5.0	19.1		8.5	12.2	0.3		9.5	7 3.6	1.2		9.4	41 25.8	13.7	

2001—2060					2061—2120					2121—2180					2181—2240					2241—2300				
	9ᵐ—10ᵐ		+36°			10ᵐ		+36°			10ᵐ—11ᵐ		+36°			11ᵐ—12ᵐ		+36°			12ᵐ		+36°	
m		′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
6.8	41	37.3	32.6	K		9.4	15	59.2	7.7		9.5	38	29.8	24.5		7.8	14	14.7	7.7	L	9.5	1	46.4	54.0	B
9.5		52.0	22.7	B		9.3	16	41.2	54.4		9.5		56.4	30.7		9.5	18	15.0	31.2		9.0		50.1	30.8	
9.5	42	14.8	13.2			9.5	17	1.3	51.4		9.5	39	41.2	25.4		9.5		16.9	45.2		8.5	3	39.8	10.5	K
7.3	43	33.1	59.8	K		6.8		5.8	56.3	L	9.3	40	0.2	35.7		9.5		54.2	12.7		9.3	4	0.5	24.2	
9.0		36.8	26.2			6.5		22.4	9.7	K	9.5		26.0	18.8		9.3	19	5.3	50.9	B	9.0		13.4	54.7	K
6.5		48.0	11.5	K		9.3		31.5	52.0		9.3	41	7.4	40.3	K	8.5		21.2	33.7	K	8.5		13.5	54.2	K
9.4	44	19.3	33.0			9.3		31.6	32.1		9.3		31.1	23.5		8.2	20	6.4	9.8	K	9.3	5	4.8	7.1	
9.0	45	20.7	55.2	K		8.1	18	3.9	58.3	K	7.3		57.9	52.8	K	9.4		41.5	48.8	B	7.5		13.5	33.5	K
9.3	46	43.9	14.2			9.1		13.7	37.8	K	8.7	42	58.2	36.9	K	8.5	21	58.9	25.4		9.0	6	57.5	26.8	
9.4	47	14.3	29.1			8.9	19	3.7	41.3	K	9.0	43	48.0	17.3		8.8		59.2	47.2	K	8.6	8	6.6	21.9	K
9.5		20.3	54.9	B		9.5		8.3	51.5		9.4	44	33.7	29.2		9.5	22	24.8	22.0		9.1		14.6	16.7	
7.6		42.9	0.2	K		9.4	20	2.3	48.3		9.5	46	10.8	18.9		9.3		25.8	6.4		9.4		18.8	38.3	B
9.2	48	37.4	55.6	K		9.2		35.9	42.3		9.0		44.8	55.6	B	9.5		36.9	37.4		9.5		26.5	15.7	
9.4		44.3	28.2			8.5		49.6	36.5		8.9	49	20.3	36.5		9.5	23	36.6	14.6		8.6		31.2	3.3	
9.4	50	10.8	59.5			9.1	21	38.2	45.4	K	9.5		46.2	18.3		9.4		57.9	43.4		9.3	9	16.8	34.9	
9.3	51	18.5	10.4			9.5		43.5	27.7		9.5	50	53.0	8.2		9.5	24	2.8	39.9	B	8.6		34.7	44.2	K
9.2		56.8	30.1	K		9.1	22	16.3	51.5	K	9.5	51	9.8	28.2		9.5	27	13.2	46.6		8.5	10	13.1	20.2	L
9.5	52	37.6	16.2			9.2		28.7	3.5		9.3		14.7	44.2		8.2		29.7	12.4	B	9.0		31.5	7.1	
9.2		45.7	10.4			9.2	23	2.0	11.8		6.0		26.4	53.8	K	9.0	28	4.6	36.5		9.0	12	3.8	19.9	
9.5	53	44.1	45.6			9.2		16.7	57.0	K	9.5	53	1.9	14.5		8.5		4.6	44.1	K	9.4		20.6	41.4	
9.3	54	21.8	8.7			9.0		46.3	59.2	K	8.6		11.4	49.8	K	9.0		29.2	55.5	B	9.0	13	8.1	31.0	
8.5		57.3	38.6	K		8.9	24	38.0	7.4	K	9.5		51.8	36.0		8.9		54.5	2.9		9.4	15	16.5	51.7	
9.2	55	9.8	44.5	K		9.1	26	36.2	41.0		9.5		54.3	5.6		9.4	29	41.6	50.9		9.5	16	6.8	3.3	
9.1		24.3	42.0	K		8.9		45.0	41.3	K	9.1	54	44.3	26.9		9.0		41.6	24.0	L	9.2	17	1.3	51.3	K
9.3	56	38.2	20.7	B		8.8		48.7	29.8	B	9.2		52.9	10.1	K	9.0	30	18.1	23.6	L	9.2		5.6	42.6	B
9.4		52.4	34.2	B		9.2		55.0	5.6		8.5		54.0	27.7	K	9.3		32.6	10.6		9.5		37.5	24.4	
9.5	57	33.3	4.6			9.5	27	23.8	32.7		7.3	55	23.6	56.3	B	8.6		56.9	23.3	K	9.5		48.3	30.3	
9.3	58	5.6	10.0			9.4		53.9	0.1		9.5		25.4	26.6		9.4	31	37.1	17.2	B	9.1	18	9.0	47.0	
9.5	59	21.6	17.1	B		9.1	28	0.7	17.5	B	9.4	56	45.9	23.0		9.5	32	4.4	23.0		8.9	20	48.6	9.5	
9.0		42.9	2.8	K		9.3		9.4	21.5		8.9		51.8	36.0		9.3		32.1	58.0		7.9	22	4.3	19.1	K
8.9		48.1	59.3	K		9.1		24.8	33.6		8.8		53.3	21.8	K	9.5	36	2.5	32.3		9.5		25.2	54.8	
9.2		59.5	38.1			8.6		28.5	30.3	L	9.4	57	14.2	43.0		9.3		4.2	30.5	B	9.5		50.5	45.5	
9.2	0	2.4	17.1	K		8.7	29	2.4	20.4	K	9.3		32.6	11.5	B	9.3	37	3.8	35.2		9.3	23	1.1	35.1	
9.3		31.8	59.8			9.0		32.7	13.3	K	9.5		48.1	27.0		9.5		35.2	56.7		9.1		15.7	33.6	B
9.5		53.7	33.8			9.5		44.3	17.2		9.5	59	30.7	7.9		9.3		55.1	5.4		9.1		18.6	56.7	
9.5		58.9	2.8			9.2	30	24.9	10.7	K	9.3	0	12.8	8.0		7.0		59.3	41.4	K	8.1		58.7	36.7	L
9.5	1	27.5	45.0			7.5		35.5	46.6	K	7.4		36.3	46.1	K	9.5	40	14.6	2.1		9.3	24	47.0	51.0	
9.1		30.8	32.7			9.5	31	29.4	16.2		9.5		57.7	34.7		9.4	42	47.5	30.3		9.0	25	22.9	7.9	B
9.2		35.0	20.1			9.3		33.8	19.7		9.5	1	36.8	59.5		9.4	43	37.1	3.1		8.3		28.5	35.5	K
9.5		55.3	52.2			8.5		49.2	15.6	K	7.5	2	14.8	7.2	K	9.5	46	31.6	58.0		8.4	26	22.0	3.2	K
9.5		59.2	34.1			7.5	32	19.8	27.7	K	9.4		59.5	41.2		9.5	47	38.2	40.7		9.4	27	35.1	38.3	
9.0	2	34.8	34.1	K		9.5		44.6	6.9		6.8	4	38.8	35.6	K	9.1	48	16.3	15.0		9.3		52.6	11.9	
9.3		53.0	47.9			9.3	33	2.3	56.0	K	9.5		40.2	2.0	B	6.5		30.5	8.7	K	9.4	28	5.2	43.3	B
8.0	3	27.8	58.6	K		8.9		36.0	30.5		7.7		49.0	36.8	K	9.3		35.1	49.0		8.7		9.9	54.8	K
9.5	4	36.3	7.9			9.0	34	8.2	29.4		9.1		49.4	31.5		6.6		48.2	15.6	K	8.8		13.4	4.2	B
9.0	5	54.8	37.1	K		9.0		18.2	7.7	K	9.4	5	12.7	30.2		9.5	49	16.1	50.8		8.9		21.0	32.5	
9.0	6	9.7	35.9	K		9.5		39.3	34.6		9.3	6	19.5	40.2		9.0		31.9	39.6	K	9.5		52.2	48.8	
9.5		22.4	47.1			9.3		47.2	55.7		9.5		20.3	18.2		9.4		50.8	39.5	B	9.1	30	10.5	31.6	
9.5	7	9.4	50.1			9.5		54.5	7.8		9.2	7	23.5	12.1		9.5	53	50.7	36.1		9.5		46.0	49.1	
9.5		15.3	55.6			9.5	35	20.8	45.8		8.0		42.0	38.4	K	5.5	54	13.9	51.0	K	9.5		54.9	25.1	
9.5	8	34.0	44.6			9.4		22.5	58.7		8.5	10	7.4	13.9	K	9.4	55	9.8	56.0		9.5	31	11.0	21.5	
9.5		53.8	40.3			9.0		33.8	38.8		9.5		17.0	12.8		8.3		14.2	32.1	B	9.5		20.4	58.5	
9.5	9	36.5	3.7	B		9.4	36	30.0	22.8		8.4		36.3	52.1	K	9.0		24.6	26.6	K	9.4		33.0	6.9	
9.5		43.7	8.1			9.3		56.8	1.7	K	9.5		47.9	10.9		9.4	57	3.8	32.0		9.4	32	2.8	9.9	
9.4		43.8	28.0			9.3	37	3.7	8.3		7.0		55.2	16.8	B	7.3		14.2	21.8	K	6.0		14.6	46.1	K
9.5	10	2.7	55.2			9.5		28.0	42.7		8.8		58.8	44.1	K	9.0		25.6	28.4	K	9.3		51.4	52.5	
9.4		52.0	12.6			9.1		44.0	19.7	K	9.2	11	5.2	41.3	K	9.0	59	13.5	8.9	B	9.5	33	6.8	51.6	
9.0	12	47.8	16.3	K		9.1		50.3	27.2	K	9.2	12	28.4	51.2		9.3		32.0	52.8		9.5		58.5	51.1	
9.5	14	12.5	7.0			8.7	38	3.5	23.4	K	9.3	13	13.5	58.0	B	9.5	1	23.9	53.7	B	9.0	35	2.7	25.9	B
9.3	15	45.0	13.1			9.4		22.5	22.1		8.1		39.2	26.0	K	9.5		43.0	22.2		8.9		3.2	35.7	

2301—2360					2361—2420					2421—2480					2481—2540					2541—2600				
	12ᵐ—13ᵐ		+36°			13ᵐ		+36°			13ᵐ—14ᵐ		+36°			14ᵐ		+36°			14ᵐ—15ᵐ		+36°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
8.8	35	28.7	44.4	K	9.0	12	51.2	31.8		9.5	46	10.0	38.3		9.0	16	40.4	54.3	K	9.5	46	0.5	0.4	
9.4	36	11.9	41.0		6.9	13	3.9	52.1	K	9.5	47	16.5	14.1		9.3		42.7	55.3	B	9.2		3.0	12.6	
9.0		22.7	57.5	K	9.1	14	1.5	28.0	B	9.1		17.0	6.0		9.4		49.5	55.7		9.5	47	15.7	2.0	
8.9		38.3	7.0		9.5		16.9	26.3		9.5	48	25.0	10.3		9.5		55.8	55.3		9.1		29.6	29.1	K
6.7	37	10.0	34.5	L	9.4		23.9	34.4		9.2		27.6	55.0	K	8.2	17	27.3	53.9	K	9.1		30.5	21.3	
8.0		48.5	26.6	K	8.0	15	25.0	23.5	K	9.5		49.0	23.6		9.5		54.1	40.1		9.3		53.3	30.0	
9.5	38	20.8	43.1		9.1	16	0.3	6.7		8.5	50	27.2	9.8	K	9.4		55.6	53.4		8.8	48	3.5	23.3	K
9.2	42	0.3	43.8	B	8.3		4.7	41.7	K	9.5		55.9	5.4		9.5	18	21.7	40.2		9.5		6.7	7.6	
7.7		17.8	6.6	K	9.5	17	27.5	21.3		9.5	51	30.4	30.2		9.1		49.4	11.3		9.0	49	7.5	59.0	K
9.4	43	13.0	0.4		8.9	18	6.8	0.4		9.5		56.9	13.5		9.4		56.7	35.9		8.3		43.2	2.7	B
7.8		21.5	29.7	K	9.5		49.7	47.8		9.3	52	52.7	31.7		9.0	20	2.4	28.2	K	9.3		45.0	21.6	
9.2		43.3	43.2		9.0		50.5	54.5	K	9.0	54	7.6	15.3	K	9.4	21	52.8	55.4		9.2		52.5	30.4	
9.2	45	39.7	48.5	K	9.0		51.0	33.2		9.3		29.4	5.7		7.5		55.4	13.5	K	9.5	50	44.0	38.9	
7.5	46	51.0	31.2	K	9.5	20	34.1	54.7		9.3		40.9	6.0		9.5		55.6	25.3		8.8	51	20.0	34.3	K
9.4	47	2.5	22.0		7.8		58.5	28.6	K	7.0	55	22.4	55.9	K	6.5	22	17.9	51.0	K	7.2		20.7	4.6	K
9.2		13.5	43.1		9.5	21	9.6	21.0	B	7.0	56	7.3	49.4	K	8.7	23	34.4	52.2	K	9.5	52	5.2	10.0	
9.2		39.0	41.0		9.5		40.2	56.3		9.2		33.3	58.6	K	9.2		41.0	7.3		9.4		21.5	31.5	
9.5		40.8	36.2	B	9.5		41.2	51.4		9.5	57	29.9	7.0		8.6	24	18.8	9.7	K	9.5		25.8	57.5	
9.4	48	30.0	16.3		9.1	24	25.0	39.1	K	9.4	58	40.9	42.0	B	9.4		43.2	33.8		9.5		28.1	35.5	B
8.4		50.0	44.1	K	9.5	25	33.5	29.6		8.6		43.6	30.2	K	8.0		48.9	5.4	B	8.8	53	1.2	25.9	K
8.7	49	16.3	7.9	K	8.9		49.3	59.7	K	9.5	59	14.5	9.1		9.5	25	16.0	25.5	B	9.5		30.0	16.0	
9.5	50	51.2	0.7		7.7		59.0	47.7	K	9.5	1	48.2	34.7		9.1		44.2	33.0		9.5		44.3	59.0	
9.4	51	3.3	20.5		9.5	27	44.3	22.6		9.5	2	44.1	21.9		9.5	26	5.0	56.1		9.0	54	0.9	29.5	B
9.5		44.8	59.6		8.2		56.9	44.8	K	9.4	3	14.6	16.6		8.5		12.1	24.7	K	9.5		19.0	1.6	
9.5	52	4.5	3.5		9.0	28	41.9	50.1	B	8.0		23.0	28.5	K	7.3	27	39.2	13.4	K	8.5	56	1.5	15.7	K
9.2		40.3	54.5		9.1	29	38.5	56.3	K	8.1	4	8.8	8.4	K	8.3		40.7	41.5		9.4	57	27.8	35.3	
9.4	53	29.1	57.0	B	8.5		42.1	35.6	K	9.5		42.0	32.0		9.3	28	48.2	12.6		9.1		40.0	12.2	K
8.8		32.0	32.5	K	9.5		45.0	42.2		9.5		46.5	17.1		9.3	29	37.3	50.0		9.0		41.3	28.3	
9.5		42.6	5.4		9.4		51.9	27.8		8.9		51.9	58.0	K	6.5	31	13.0	33.9	K	9.5	58	9.7	26.1	
9.4		47.4	0.7		9.4	30	12.5	23.4		8.3	5	22.3	5.3	K	9.5	32	14.5	51.2		9.5	59	18.4	44.0	
9.2	54	22.2	38.8	B	9.1		15.0	24.3	B	7.8	6	48.5	17.1	K	9.4		39.9	8.5		9.5		25.6	27.2	
9.4		54.0	29.8		9.5		17.7	24.3		9.5		48.9	28.0		9.5		48.3	37.3		9.3		39.1	20.0	
9.5	55	8.7	53.1		8.5		57.0	28.0	K	7.0	8	3.2	17.6	K	9.5	33	0.8	57.2		9.5	0	39.8	44.1	
9.5	56	20.0	4.9		9.0	31	12.8	53.2	K	8.5		12.6	13.3	K	9.5		10.0	24.2		8.5	1	11.0	2.8	K
9.4		49.8	30.8		8.9		33.3	58.1	K	9.3		22.7	13.8	B	8.7	34	59.0	42.1	K	9.2	3	21.3	46.7	
8.7	58	18.3	59.8	B	9.3		50.3	6.6		9.1		37.1	56.2		9.5	35	6.5	22.1		9.5		46.8	57.8	
5.5	59	1.0	34.4	K	9.5	32	34.7	42.2		9.3		55.6	25.3		9.5		16.5	23.8		9.5	4	26.3	57.6	
9.3		12.3	27.4		9.5		45.0	8.8		9.5	9	18.9	32.4		9.5		59.0	36.0		9.1	5	3.2	23.2	
8.6	0	7.8	53.7	K	8.9		56.4	20.0		9.5		41.3	58.0		9.3	36	20.3	8.8		9.2	6	5.4	57.7	
9.1		38.3	53.2		9.5	33	19.0	32.2		9.5		52.1	52.5		8.9		25.5	11.3		9.5		16.0	48.0	
9.3		44.2	34.6	B	9.3	35	41.4	0.4	K	9.1		55.8	37.7	K	9.5	37	19.0	45.1		9.1		43.9	54.0	K
9.5	3	3.7	50.6		9.0		51.5	51.3	K	9.4	10	7.5	13.1		9.2		48.2	50.1		9.3		53.7	14.7	B
9.5		35.3	48.1		9.5	36	42.5	51.5		9.5		38.6	12.9		9.5	38	33.0	4.9		8.0		54.0	31.0	K
7.5		54.2	42.5	K	9.3	37	2.4	34.6		9.3		46.2	7.7	K	9.5		34.0	16.5		9.0	7	54.5	41.0	B
9.2	4	48.0	42.8	K	8.7		9.0	3.9		9.5		53.2	8.6		9.5	39	35.5	39.2		9.5	8	56.3	44.2	
8.8	5	9.5	2.5		8.0		13.3	26.7	L	9.5	11	20.2	16.2		9.5		59.6	49.6		9.1	9	44.5	30.7	R
9.0		20.1	37.5	B	9.5	39	56.4	42.2		9.1		25.6	24.8	K	8.6	40	17.2	31.6	K	9.5	10	0.4	53.9	
9.5		25.5	9.5		8.8	40	4.5	16.5		4.8		51.8	10.7	K	9.3		34.0	37.3	K	9.0		12.1	8.7	
8.8	6	46.6	2.4	B	9.5		18.7	41.4		9.5		52.2	58.7		9.5	41	11.0	34.8		9.5	11	9.0	43.2	
9.5		57.3	30.1	B	9.3		46.5	7.2	K	9.1	12	31.3	44.5	K	7.5		30.0	10.7	K	9.0	13	9.0	58.9	K
9.5		58.5	26.6		9.3	41	34.7	44.0	B	9.5	13	11.7	43.2		7.5		57.7	16.0	K	9.5		15.0	21.9	
6.8	8	27.0	12.3	K	9.5		45.1	44.6		9.5		26.6	0.1		8.7	42	8.0	27.3	K	9.5	14	16.3	38.0	
9.2	9	23.1	56.5		9.5	43	0.7	15.2		9.5		28.6	42.2		8.4		58.0	39.0	K	9.5		21.0	45.4	B
8.0		28.5	39.1	K	8.0	44	29.6	38.1	L	9.5		36.7	33.4		9.3	43	5.0	16.9		9.4		25.1	41.1	B
9.5	10	23.3	16.5		8.7		45.8	58.0	K	9.5		46.3	53.8		8.4		12.5	40.4	K	9.5		41.5	13.9	
9.5		34.1	33.6	B	9.0	45	21.7	48.2	K	9.5	15	19.5	19.0		9.5		39.0	49.6		9.5	15	19.2	26.2	
9.0		53.0	28.3	K	9.5		33.4	48.2		9.5		53.2	52.5	B	8.8	44	39.0	16.0	K	9.5		26.1	30.5	
9.3		54.7	46.5		8.7		33.6	24.5	K	8.0	16	7.7	17.8	K	9.5	45	2.0	40.4		9.3		49.4	0.4	B
8.8	11	3.7	39.5	B	9.1	46	2.0	20.4	K	9.0		9.2	47.6	K	9.3		6.0	34.0		9.5	16	22.1	3.4	
8.8		47.0	43.5	K	8.6		8.8	23.5	K	9.4		21.9	4.6		9.4		36.0	6.6		9.4		26.7	3.9	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	15ᵘ		+36°		15ᵘ—16ᵘ		+36°		16ᵘ		+36°		16ᵘ—17ᵘ		+36°		17ᵘ		+36°
m				m				m				m				m			
9.1	17	41.8	49.7	9.3	48	12.2	48.4	9.4	12	9.2	17.0	9.5	42	10.5	52.3	9.5	9	3.5	27.0
9.1	18	11.7	38.2	K	9.3		23.2	12.0	7.3		31.2	3.5	L	9.5		24.4	23.5	9.5		13.1	4.8
9.4	19	31.8	43.9		9.5	49	59.8	38.3	9.0	13	4.7	15.4		7.3	43	30.0	10.5	K	7.8		17.7	32.5	K
9.5	20	17.9	27.9		9.0	50	22.5	32.8	K	9.5		57.7	38.3		8.4		57.0	16.1	K	3.0	10	0.0	57.8	K
9.0		47.6	7.3		9.3		46.0	0.2		9.5	14	33.7	20.2		9.0	44	6.5	42.3		9.5	11	18.5	0.8	
9.4	21	17.1	58.5		9.1	51	28.2	28.5		9.5	15	17.8	50.0		9.5		17.8	10.5		9.4		26.0	36.6	
9.4		40.4	12.8		9.0		30.8	37.8		9.5		44.2	50.0		8.5		57.0	17.5	K	8.8	12	14.4	30.0	K
9.3	22	57.8	39.1		9.5		34.9	41.8		8.3	16	3.2	14.6	L	9.0	45	26.0	4.6	K	9.5		30.2	21.7	
9.4		59.0	4.2		9.5		56.2	12.0		9.5		7.0	33.7		9.0		34.0	18.2	K	7.5		41.0	15.6	K
8.8	24	0.9	33.5		9.5	52	47.0	25.7		9.4		10.5	44.8		9.1	46	22.2	40.2	B	9.3	13	46.5	39.8	
9.4		33.0	37.0		9.4		59.5	46.7		9.2		19.3	51.5		9.5		56.1	8.4		9.5	14	38.0	52.4	
8.8		57.7	24.5		8.8	53	6.4	25.8	K	9.4		40.9	3.2		9.3	47	36.5	43.0		9.4	15	14.7	57.5	
9.4	25	59.5	3.3		9.5		29.0	21.8		9.0		58.7	35.2	K	8.8		38.3	53.3		8.0		44.1	50.2	K
8.8	26	24.0	13.5		9.5		32.4	44.3		9.3	19	15.3	3.5		9.3		51.5	8.0		9.5		47.5	7.3	
9.5	27	28.8	54.6		9.5	54	9.8	35.3		8.7		19.2	21.5	K	9.0	48	42.1	14.9	K	9.4		49.0	56.7	
9.5		32.5	30.6		9.0		16.8	41.9	K	9.0		19.2	51.2	K	9.3		59.1	14.7	B	9.5		54.9	12.3	
8.4		56.8	25.5	K	9.5		17.6	34.8		9.5		31.3	59.5		8.8	49	22.6	54.8	K	8.0		55.9	38.2	L
9.3	28	6.4	57.6	K	9.5		29.9	14.7		9.0		52.2	14.5		9.5		50.9	11.4		9.5	16	11.5	23.5	
9.0	29	11.4	41.1	K	9.3		41.8	50.1		9.4	21	13.7	28.4		9.4		54.9	38.1	B	9.5	17	7.7	16.2	
9.5		53.2	16.3		9.2	55	4.6	22.0	B	9.3		43.0	19.3		9.5	50	24.5	23.0		9.3		15.2	35.6	
8.5		57.1	41.7	L	9.4		4.9	17.0	B	9.3		57.2	20.1		9.3	51	15.6	48.4		9.5		22.8	49.0	
8.2	30	18.8	24.4	K	9.3		29.7	23.6	B	9.4	22	2.7	46.0		8.6	52	0.4	57.1	K	9.0		51.3	54.9	K
7.5		42.7	12.0	K	9.5		43.1	10.6		9.5		59.6	58.0		9.2		3.3	42.4	B	9.3	18	1.3	39.4	
9.0	32	6.4	33.1	K	9.5	56	38.9	51.0		9.2	25	52.4	34.8		9.5		4.8	0.3		9.2		9.1	33.7	
8.8		12.1	45.9	K	9.2	58	30.8	2.8		9.4	26	10.5	40.8	B	9.3		40.5	14.6		9.2		45.1	14.0	
7.5		45.1	43.0	K	9.3	59	3.0	48.0	K	9.3	28	2.2	1.7		9.4		41.0	38.3		8.3		50.0	34.9	K
9.4		53.8	22.8		9.5	0	2.1	19.1		8.3		3.7	45.3	K	9.4	53	31.7	9.0	B	9.3	19	1.0	12.1	
9.5	33	24.3	9.5		9.4		5.6	1.8	B	9.5		20.9	56.4		9.0	54	26.7	3.5		9.5		59.5	47.1	
9.3	34	7.5	7.8	K	7.5		29.0	54.6	K	8.5		32.9	29.8	K	9.3		29.5	20.4		9.5	20	46.4	59.4	
9.0		37.1	58.3	K	8.6		34.5	59.0	K	9.0	29	23.5	43.0	K	9.5		30.3	43.4		9.5	21	49.6	6.1	
9.5	35	23.8	21.5		9.0	1	12.3	57.1	K	9.5		58.8	24.4		9.5		31.5	34.6		9.2	22	25.8	57.3	
9.5		49.4	42.0		9.5		24.8	28.0		9.5	30	3.0	32.0		9.3	55	3.7	30.0		8.4		44.8	37.4	K
9.0	36	11.6	27.4	K	9.0	2	17.1	14.4	K	9.0		25.9	29.1	K	8.0	56	3.7	21.0	B	8.8		44.8	12.3	
8.7		17.4	54.1	K	9.2		23.2	19.4	K	8.3		39.5	21.9	K	8.8		28.5	11.3		9.5	23	20.7	34.6	
9.5	37	18.1	1.3		9.5		46.7	8.9		9.3		59.4	51.5		9.5		37.9	55.0		9.4	24	1.2	58.4	
9.4		25.4	44.9		9.5		47.0	44.6		7.5	31	19.0	19.6	K	9.3		44.0	44.4		9.3		13.5	6.7	
9.5		25.8	4.0		9.5	3	3.8	38.3		9.5	32	7.5	52.0		9.5		56.5	18.4		9.4		14.3	29.4	
9.5		35.4	30.0		8.9		26.4	4.8		9.2		48.1	9.4		9.3	57	9.5	35.6		9.0		21.6	6.1	
9.5	39	10.4	50.3		5.0		41.0	51.4	K	9.5	33	5.2	3.6		9.5	58	22.6	52.0		8.9		22.3	30.4	
9.1		15.3	1.4		9.0		50.1	3.4		9.4		17.6	1.3		9.4		28.8	54.3	B	9.1		26.5	54.9	
9.5		28.2	23.8		9.4	4	42.1	26.2		8.5		23.1	11.1		9.0		30.7	7.6		9.5	26	0.4	24.6	
9.3		45.9	5.6		9.5		42.5	22.0	B	9.1	34	16.0	33.3		9.4		40.0	14.5		9.0		1.0	16.7	
8.3	40	27.1	51.8	K	9.5	5	13.8	44.7		9.3		21.0	39.7		7.8	59	11.1	57.0	K	9.3		20.1	41.2	
8.7		58.0	54.0	K	8.0		53.1	23.5	K	9.0		23.0	47.0	K	9.2	0	21.2	59.0	K	8.0		21.7	39.4	K
7.6		59.5	53.5	K	9.5	6	2.0	20.6		9.5	35	2.7	2.5		9.4		42.5	38.2		9.5		31.5	7.7	
9.3	41	6.9	58.5		6.2		30.6	48.2	L	9.4		45.3	46.0		9.5	1	3.5	56.6		8.6		36.1	53.9	K
9.5		43.4	27.0		9.3	7	43.7	39.8		7.8		53.5	27.8	K	5.5	2	53.9	8.0	L	9.3		38.3	10.4	
9.2	42	4.4	48.5	B	9.5		50.5	2.1		neb	36	28.8	44.4		9.4		55.5	0.2	B	9.5		49.5	12.2	
9.5		56.9	29.0		9.3		56.7	20.5		9.5		43.9	25.3		9.4	3	1.7	6.9		9.0		53.0	23.3	
9.5	43	49.2	35.0		9.5		57.9	40.0		9.3		50.2	12.5		9.0		5.8	1.6	B	9.0	27	14.8	19.8	
9.5	44	34.8	0.0		9.5	9	38.5	11.7		9.4	37	0.5	22.3	B	9.5	4	16.2	40.2		8.8		20.0	53.8	K
5.0	45	44.5	6.7	K	9.4	10	13.7	30.8		7.7		56.0	47.4	L	9.5		51.9	41.2		9.0		20.2	22.8	
9.5	46	33.0	6.8		8.3		21.8	0.2	K	8.5	38	30.5	38.6	K	9.3	5	30.0	52.2		9.3		38.8	43.8	
9.5		46.1	24.7		7.0		34.8	55.1	K	9.5		58.3	8.6		9.5	6	6.4	7.5		9.2	28	0.7	6.8	
9.5		58.5	11.7		7.9		36.9	14.1	B	9.1	39	20.5	31.4	K	9.5	7	7.4	19.9		9.5		12.8	58.4	
9.5	47	1.2	24.7		9.5		53.2	18.4		8.8		36.7	2.7	K	9.5		36.7	6.2		9.1		16.7	52.4	
9.5		10.8	35.7		8.6	11	2.0	26.9	L	9.3		59.0	39.0		9.5		39.5	56.8		8.7		27.6	48.1	K
9.2		41.4	44.6	K	8.3		26.7	52.1	L	9.5	40	19.0	15.3		9.1	8	0.2	46.6		9.1	30	1.5	35.2	
9.3		53.8	10.6		8.9		37.8	14.0	K	8.4	41	6.4	57.4	K	9.4		14.6	43.4		9.1		3.4	30.5	
9.4	48	8.4	33.6		8.6		51.6	3.2	K	9.0		14.5	14.7		8.9		48.0	52.6		9.2		17.5	4.9	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ᵘ	+36°			17ᵘ—18ᵘ	+36°			18ᵘ	+36°			18ᵘ	+36°			18ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.4	30 20.2	11.9	K	9.5	47 5.5	30.1		9.4	2 12.3	51.8		9.2	12 28.8	23.5	K	9.2	23 14.2	54.9	K
9.5	38.1	52.4		8.7	13.0	20.1		9.5	33.4	16.0		9.5	52.7	18.7		9.5	24.4	14.4	
9.0	31 32.8	8.9	K	8.9	15.0	58.0		9.1	37.5	38.7		9.5	13 11.8	14.9	B	9.4	27.5	33.4	
8.6	42.5	2.9	K	9.1	15.8	26.3		9.0	37.5	27.7	K	9.5	18.1	21.4		9.5	35.3	55.4	
9.5	32 24.5	25.0		9.0	41.4	13.5		9.0	48.7	27.3	K	9.2	23.2	3.5		9.5	38.1	14.6	
9.3	33.7	56.2		8.3	48 11.2	6.3	S	9.0	58.9	40.5		9.3	26.3	46.0		9.4	48.5	20.1	B
9.5	51.9	40.5		9.0	19.7	30.1		5.9	3 1.0	23.3	K	9.5	34.8	37.4		9.5	50.0	16.4	
9.5	55.7	27.5		9.0	27.0	0.8		9.2	12.8	38.4		9.2	35.2	11.4		9.5	24 2.5	33.1	
9.5	33 0.2	35.0		8.5	28.1	12.9	K	9.4	13.3	54.0		8.9	54.4	29.7		9.5	8.8	38.0	
9.0	4.0	55.6	K	8.8	49 5.8	6.7	K	9.3	32.8	26.3		8.9	54.9	33.7		9.5	10.8	53.0	
9.0	12.1	9.1		9.5	40.5	2.1		9.3	33.5	48.0		8.8	14 4.9	0.0		9.5	37.7	42.0	
7.0	17.5	49.8	K	9.5	41.8	11.5		9.5	43.6	19.0		9.0	38.0	33.5		9.4	39.9	59.2	
9.5	19.0	22.7		9.3	50 4.5	40.7		9.5	59.0	52.3,		9.4	41.9	43.6		9.5	58.7	33.4	
8.6	39.1	57.1	K	8.8	5.7	7.0		9.5	4 2.0	50.6		4.7	47.1	0.1	K	8.0	25 1.6	57.6	K
9.2	41.6	2.9		7.5	21.6	11.5	K	8.7	17.4	3.1		9.2	47.7	51.5		9.5	1.8	29.7	B
8.5	59.3	33.9	K	9.0	51 11.5	51.1	K	8.0	24.7	29.6	K	9.1	54.4	10.0		9.0	9.2	42.0	
9.0	35 0.8	45.6		8.5	21.6	6.1		9.4	35.3	7.8		8.8	58.6	36.9	K	7.5	30.1	9.1	L
8.6	3.5	3.1	K	8.6	56.8	35.5		9.2	44.9	58.3		9.0	15 46.2	34.7	K	9.2	31.7	1.9	
9.0	46.8	12.9		7.3	52 9.3	52.5	K	6.0	56.6	26.2	K	8.9	56.0	26.3	K	8.7	33.2	13.5	
9.5	36 4.5	19.4		9.5	24.4	50.8		9.5	5 44.1	45.2		8.1	16 14.8	52.7	K	9.0	49.3	26.8	
9.2	5.4	26.0		8.8	31.0	12.3		8.7	58.5	37.0		7.2	17 4.2	14.0	L	9.0	57.4	29.2	
8.8	23.0	43.9	K	9.5	42.2	21.6		9.5	6 16.8	12.5		9.2	9.6	18.9		9.0	59.2	12.9	K
8.5	46.5	29.1		9.3	49.8	44.9		9.5	17.5	22.6		9.5	18.5	2.3		9.5	26 6.7	51.9	
9.2	37 1.4	6.8		9.5	53 20.0	43.5		9.5	18.7	40.1		7.3	24.0	50.2	K	9.4	18.3	58.4	
9.3	2.2	34.6		7.0	26.6	52.7	K	9.5	32.0	25.5		9.0	33.7	33.7		9.4	51.1	6.5	
8.8	4.5	25.0		6.0	39.4	17.4	K	9.5	53.6	34.1		9.5	40.4	15.9		9.3	27 8.6	48.2	
9.1	18.0	9.5		9.0	45.1	59.4	K	9.4	57.4	49.5		9.0	49.1	11.7		7.7	13.2	19.5	K
9.0	20.5	9.0		9.5	53.5	52.2		9.3	7 3.1	5.7		9.5	57.2	50.2		8.5	19.4	53.1	
9.5	49.2	17.4		9.1	54 24.5	5.4	K	9.5	16.5	10.5		9.1	18 15.8	8.2	B	9.5	21.1	41.7	
9.5	38 5.5	47.0		9.1	54.8	44.1		9.5	18.0	15.2		9.5	22.5	3.7		8.3	25.5	33.8	
9.5	44.8	59.1		8.9	55 1.0	4.4	K	9.4	24.4	41.0		9.5	37.3	26.7		9.3	29.8	1.4	
9.5	39 4.9	26.6		9.3	10.3	36.6		9.1	34.8	54.3		9.5	19 8.6	14.3		9.3	33.7	1.6	
9.5	51.1	3.3		9.5	15.7	51.3		9.5	40.3	2.3		9.5	8.6	30.9		9.2	39.9	21.5	K
9.4	40 43.2	7.0		9.1	29.0	56.3	K	9.0	8 0.1	55.5		8.9	11.1	4.5	K	9.2	43.3	17.3	K
9.5	46.8	56.7		9.3	37.2	16.6		8.5	18.7	6.9	K	9.5	11.5	3.0		9.3	43.8	57.3	
9.3	41 1.5	15.0		9.5	56 3.1	57.3		9.5	25.2	23.2		9.5	38.2	38.5		9.3	53.7	6.2	
6.5	48.5	8.1	R	9.5	51.4	2.5		9.0	29.8	56.6		9.0	43.9	51.3	K	9.4	54.5	16.8	B
9.5	42 37.8	19.7		9.3	52.2	20.6		9.3	33.9	39.6		9.5	56.6	57.9		9.1	56.3	55.9	
7.2	49.5	3.5	K	9.5	57 11.3	37.4		8.6	47.1	34.9		9.4	20 22.4	53.2		9.5	28 4.2	13.3	
9.5	53.0	45.0		9.5	29.8	43.5		9.5	52.5	36.6		9.3	29.1	18.2		9.5	21.7	52.6	
8.0	53.7	9.9	K	9.3	45.2	27.0		9.5	9 2.1	25.0	B	9.4	34.5	53.2		9.5	26.2	10.1	
6.5	55.2	36.3		7.2	58 2.5	7.0		8.5	3.4	8.9	K	9.5	37.7	26.8		8.6	34.2	15.3	K
8.1	58.3	12.5	K	9.5	3.6	11.7		9.4	22.0	33.6		9.5	44.7	53.2		9.5	48.6	43.7	
9.2	43 1.0	7.8		9.5	20.0	15.0		8.1	48.6	20.3	K	8.9	47.8	14.4		9.5	52.9	34.6	
9.5	11.8	40.2		9.4	29.5	20.8		9.3	50.0	31.2		9.5	59.0	23.6		9.5	29 1.1	2.3	
9.3	17.5	33.2		9.3	30.8	8.5		8.9	54.2	37.4		9.5	21 17.6	11.6		8.0	5.3	7.7	
9.5	18.5	7.8		9.5	49.2	47.2		8.3	10 16.5	43.6	K	9.4	21.5	52.8		9.0	11.7	21.0	K
8.6	47.6	37.0		8.1	51.2	23.5		9.4	19.3	9.9		8.3	29.3	21.7		9.5	20.0	57.3	
8.9	48.4	58.0		8.3	59 20.5	48.4	K	9.0	27.6	14.9	K	8.6	33.5	36.8		7.6	28.4	0.9	
9.0	44 13.0	42.2		9.3	21.1	43.0		9.4	36.2	54.4		7.7	36.5	4.8	B	8.0	29.2	12.8	
9.5	30.8	51.8		9.4	22.3	3.9		9.3	43.1	55.6		9.5	47.1	28.9		9.3	50.6	22.4	
9.5	31.9	59.3		9.5	47.5	55.3		9.4	51.9	22.2		8.5	47.6	30.1		9.1	30 5.4	23.9	
7.8	38.4	26.7		9.1	58.3	37.4	K	9.4	52.8	36.0		9.3	22 3.8	24.7		8.6	6.3	24.6	K
9.0	41.0	8.0		8.5	0 31.8	17.0		9.5	11 3.8	53.9		7.8	5.0	35.0		9.3	13.4	42.5	
9.5	45 30.5	36.3		9.5	1 2.0	39.4		9.3	10.4	59.9		9.3	10.2	43.6		9.5	14.2	49.7	
7.0	31.3	52.9	K	9.3	8.8	53.2		8.7	13.5	22.5	K	9.5	22.4	30.6		9.5	34.1	23.2	
9.5	46.1	1.7		9.5	16.8	46.6		9.5	33.7	19.3		9.5	32.3	10.6		9.3	36.8	2.4	
9.5	46 28.8	27.0		9.3	2 1.5	38.4		8.9	39.4	19.7		9.5	36.4	58.8		9.5	37.6	10.1	
9.3	27.5	20.5		7.9	2.2	23.6	K	8.1	43.1	58.8	K	9.3	41.1	16.8		9.5	41.3	56.6	
8.7	48.0	57.1	K	8.8	3.2	17.0		9.3	12 14.2	59.9		9.4	54.0	42.8		8.5	48.7	48.6	K

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵐ	+36°			18ᵐ	+36°			18ᵐ	+36°			18ᵐ—19ᵐ	+36°			19ᵐ	+36°	
m		′		m		′		m		′		m		′		m		′	
9.5	30 56.3	12.5		8.3	40 51.4	33.4	K	9.5	49 44.4	38.4		9.5	57 50.8	3.6		8.6	7 36.4	17.1	
7.2	31 5.4	50.6	K	9.3	41 18.0	15.3		9.5	46.4	58.0		8.8	58 12.9	11.5	R	9.3	37.2	28.5	B
8.9	12.5	29.6		9.3	19.5	35.3		9.3	56.0	0.3		9.2	15.2	15.8		8.5	37.8	8.5	
9.0	19.5	19.5	K	9.5	31.7	4.9		8.1	50 4.0	33.3	K	9.4	18.9	33.3	B	9.4	39.4	32.8	
9.5	38.3	45.0		9.4	34.8	21.7		8.8	4.1	11.6		9.5	25.3	37.0		8.1	44.1	40.6	B
9.5	42.7	22.3'		9.0	42 1.4	46.6		9.5	10.2	3.5		9.0	29.1	52.3		8.4	56.6	5.5	B
9.5	49.5	41.3		9.5	25.2	37.0		9.0	19.7	35.5		9.0	35.2	41.8	B	9.4	58.5	27.0	
9.5	50.3	18.5		9.1	31.1	6.8		9.0	20.3	55.3		9.4	35.3	42.2		9.5	8 1.3	21.2	
9.5	56.4	25.2		9.1	37.3	53.0		9.5	23.5	22.8		8.1	53.7	27.1	B	9.1	1.6	34.2	
9.4	56.8	55.5		7.4	43 0.8	55.0	L	9.5	46.9	13.2		9.5	59 11.4	4.6		9.4	6.5	3.0	
9.3	32 4.6	3.0		8.5	17.1	2.1	B	9.5	51 3.8	18.6		9.2	17.0	29.4		8.6	11.6	16.2	
9.3	9.9	37.5		7.2	22.9	16.6	K	9.5	12.1	38.5		9.5	42.2	42.0		9.4	11.8	45.4	
9.5	27.4	28.9		9.4	35.0	29.9		9.5	12.7	27.5		9.5	58.8	29.6		9.5	13.0	7.6	
9.5	41.5	32.2		8.8	38.8	25.0	K	9.5	24.8	22.8		9.5	0 11.7	51.3		9.4	25.2	8.0	
9.4	48.0	13.1		9.5	40.7	52.2		9.4	28.6	0.1		8.2	18.8	43.2		9.2	28.1	41.7	
9.4	51.4	45.3		9.5	52.0	49.1	B	9.5	32.6	47.1		9.4	19.3	42.2		8.2	32.0	3.9	
9.5	54.8	58.8		9.0	58.6	37.1		9.5	49.0	31.4		8.5	21.1	48.1		8.6	36.6	25.7	
9.5	57.7	44.3		9.5	44 6.5	52.9		9.5	55.8	24.0		9.5	23.6	31.7		6.9	42.0	10.4	L
9.0	33 4.4	39.6		9.2	10.4	18.1		7.0	52 3.9	16.7	K	9.5	26.8	48.1		9.2	44.5	40.1	
9.1	8.0	12.2		9.2	38.4	40.6		9.5	6.7	53.0		9.5	57.5	9.1		9.2	44.8	8.4	
9.2	56.1	4.2		8.0	40.1	30.6	K	9.5	11.8	56.3		9.3	58.4	20.3		9.5	9 3.1	30.4	
9.0	34 4.7	5.2		9.3	45.8	5.6		9.5	32.2	19.3		9.5	1 20.6	44.4	B	9.5	6.4	44.5	
9.2	15.2	39.8		9.5	58.3	13.3		8.6	47.8	39.9		9.5	42.5	28.8		9.5	10.3	6.3	
9.3	45.9	11.6		9.5	45 8.9	49.1		9.5	49.8	51.2		9.5	45.2	18.2		8.7	15.6	4.6	
9.4	35 16.1	18.1		9.4	18.0	3.9		8.0	57.2	24.6	L	8.4	2 18.0	53.7	K	9.2	17.3	38.3	
9.5	29.4	0.8		9.5	20.1	36.1		9.4	53 1.7	21.6		8.2	18.5	1.9	K	7.7	35.4	44.5	K
9.5	35.7	29.7		9.4	42.5	39.6	B	9.5	2.0	34.3		8.5	25.1	53.7	K	9.4	46.3	17.7	
9.5	46.8	59.1		9.4	50.2	52.7		8.0	18.7	13.7	K	9.4	27.9	7.4		9.5	47.2	14.7	
9.0	50.3	38.1		9.5	53.8	8.0		9.4	19.4	24.2		9.5	39.3	19.6		9.5	58.3	35.1	
9.5	36 0.6	12.9		9.2	46 6.0	8.3		9.5	27.6	29.2		9.5	44.2	41.2		9.5	10 15.3	28.9	
9.0	7.3	18.4		9.0	10.3	58.5		9.4	44.9	50.6		9.5	55.3	6.9		9.5	30.2	6.0	
8.7	11.1	19.1		9.2	22.4	2.7		8.9	48.9	41.6		9.3	3 0.0	32.9		9.5	47.8	7.0	
9.1	30.8	34.3		9.4	28.5	38.3		9.5	56.6	42.9		9.3	5.4	10.8		9.5	52.3	28.6	
9.5	42.0	57.7		9.5	29.7	23.5		9.4	56.7	24.7		9.4	26.4	53.4		8.9	52.6	42.2	K
9.0	50.7	20.3		6.3	32.2	22.2	K	9.4	54 2.5	3.9		9.4	27.0	33.2		9.4	57.8	13.6	
8.5	53.3	35.9	L	9.5	46.6	42.5		9.5	4.4	54.1		9.5	37.4	9.3		9.5	11 0.7	5.9	
8.8	37 11.8	43.5	B	9.4	47 7.7	36.4	B	9.5	23.0	43.9		9.5	44.1	31.1		8.5	9.5	20.6	B
8.8	12.4	7.9		9.5	17.2	19.1		8.8	32.1	53.3	K	9.4	46.1	0.5		9.3	14.4	34.0	B
7.0	17.3	24.7	L	9.5	35.4	59.7		9.4	33.6	22.0		9.2	53.7	55.4	K	9.5	14.8	17.8	
9.5	23.7	48.2		9.2	35.5	34.3	K	8.8	35.5	20.9	K	9.2	56.5	21.0		9.3	26.7	49.4	
8.1	26.4	47.2	K	8.8	37.6	9.1		9.5	36.3	20.3		9.5	59.8	15.9		8.9	33.1	14.8	
9.5	35.2	14.3		8.6	46.1	3.2		9.1	42.7	13.5		9.5	4 3.4	34.0		9.5	34.3	24.8	
7.5	48.6	49.4	K	8.8	52.3	10.6		9.0	57.7	46.4	K	9.1	7.7	45.6		9.5	45.5	56.8	
9.1	56.0	16.8		9.1	48 4.8	30.8		9.5	55 6.5	7.4		9.4	31.9	22.1		9.5	58.0	9.2	
9.1	38 19.7	20.0		9.0	8.3	37.0		9.5	8.5	6.2		9.0	38.0	48.6		9.4	12 4.0	2.1	
6.4	32.3	24.7	L	9.1	31.5	37.9	K	9.5	17.2	12.6		9.2	44.2	20.6		8.0	4.7	58.1	
9.1	43.9	1.2		6.1	39.7	47.4	L	9.5	44.0	13.1		9.1	55.5	55.5		8.0	8.5	59.3	
9.5	39 6.6	23.4		9.2	44.9	50.3		9.5	46.1	32.7		9.5	5 6.4	33.4		9.3	13.4	28.6	
9.2	10.8	35.1		9.3	54.0	11.1		9.5	49.6	48.4		8.7	7.0	54.2		9.4	15.7	55.9	
9.4	26.1	57.6		9.5	57.0	39.5		9.2	54.1	29.7	B	8.7	27.2	46.7		9.2	16.1	28.3	
9.4	26.7	52.6		9.5	57.1	37.7		9.1	56 5.5	7.5		9.5	48.6	6.3		9.5	34.0	38.5	
9.5	35.9	35.8		9.0	58.1	40.4	K	8.1	10.6	52.3	K	9.2	53.9	28.3		9.5	36.6	30.7	
8.9	39.4	28.9		9.1	58.5	42.4		9.5	23.9	56.3		8.5	54.6	47.7		9.5	40.3	23.3	
9.5	52.4	25.8		8.7	49 7.6	43.8	K	9.5	30.3	37.1		8.6	6 10.1	3.0	K	9.5	59.5	20.7	
9.3	40 12.2	43.7		7.8	7.9	32.9	K	9.5	32.0	54.3		9.3	19.8	28.2		9.5	13 27.2	39.1	
7.5	16.9	25.0	B	9.3	14.4	4.6		9.5	57.0	27.3		9.0	28.2	25.0		8.8	37.6	59.3	
8.7	17.5	42.0		8.3	15.6	40.1	K	9.5	58.9	39.0		9.4	39.5	59.6		9.2	46.6	9.6	B
9.5	39.3	52.4		9.4	16.2	16.4		9.5	57 20.3	31.1		9.5	53.6	25.2		9.5	50.9	2.9	
9.5	41.8	44.1		4.5	26.8	43.1	K	9.5	22.3	31.8	B	7.8	7 6.8	23.3	K	9.2	57.8	18.3	
9.4	48.5	48.3		9.3	30.2	49.0		9.5	46.4	9.7		9.5	31.7	4.1		9.5	14 9.5	47.4	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ʰ	+36°			19ʰ	+36°			19ʰ	+36°			19ʰ	+36°			19ʰ	+36°	
m		′ ″		m		′ ″		m		′ ″		m		′ ″		m		′ ″	
9.2	14 24.8	48.9	B	9.5	21 49.3	19.7		8.9	30 45.1	44.0	K	9.4	39 23.3	20.3		9.5	46 27.3	23.6	
7.1	36.1	29.8	B	8.3	50.2	25.9		9.5	52.3	48.6		9.5	40.5	48.9		8.5	29.3	16.2	L
9.5	37.9	5.5		9.2	22 18.5	7.2		9.0	56.3	6.6		9.5	57.7	46.1		8.9	31.7	16.8	
9.1	45.1	36.8		8.4	24.8	48.9	K	9.4	31 1.3	41.6		9.3	57.9	38.7		6.3	58.0	3.5	L
9.5	51.0	55.5		8.8	27.5	9.0		9.5	1.8	35.7		9.0	40 3.1	1.3		8.5	47 0.3	15.7	
8.9	53.6	22.4		7.3	28.4	14.3	S	9.5	3.3	38.4		9.0	3.3	44.9		8.6	1.9	25.3	
8.5	56.2	7.3	K	9.4	51.7	25.4		9.2	11.3	50.2	K	9.2	6.7	34.6		9.1	7.0	5.9	
9.2	15 34.2	53.3		8.3	52.3	7.2		9.0	12.4	45.5	K	9.5	15.3	4.8		9.4	10.8	37.9	
9.1	36.9	58.2		9.4	57.4	27.1	B	8.8	16.4	18.6	R	9.4	20.9	51.2		9.1	20.9	59.4	K
9.2	36.9	50.5		8.9	23 9.8	46.0	R	9.5	26.0	34.4		9.3	39.4	39.8		8.8	41.3	41.6	
9.1	41.0	54.9		9.1	13.4	41.8		9.4	28.2	16.6		9.5	39.7	13.3		9.5	45.0	8.8	
9.5	53.8	4.8		8.1	26.1	29.2	K	9.5	43.6	34.4		8.4	42.5	55.5		9.4	59.2	53.7	
8.8	16 4.1	37.1	K	9.4	27.4	14.0		9.1	44.2	53.0	K	9.5	47.4	30.7		9.3	48 7.9	13.2	
8.9	7.2	9.2	K	7.6	29.7	53.6	K	9.0	32 0.1	52.0	K	8.7	49.4	37.4		9.0	11.3	50.0	B
9.3	8.9	50.4		9.5	47.3	3.0		9.5	1.6	43.9		9.5	56.2	2.9		9.4	27.2	20.8	
8.2	14.1	48.1	K	9.5	47.8	21.5		9.4	10.2	7.2		9.3	41 15.4	52.7		9.4	28.3	53.3	
9.5	20.3	17.6		9.1	24 0.0	55.8	K	9.5	12.5	34.2		9.5	26.8	0.9		8.5	40.1	4.5	
9.2	38.9	55.6	K	9.2	3.9	39.7	K	9.5	27.0	31.3		9.1	42.7	35.2		8.8	49 2.1	32.8	
9.3	43.5	54.7		9.5	11.4	21.4		9.5	54.7	8.6		9.5	44.2	15.0		8.9	4.1	34.5	
9.4	56.3	53.0		8.9	16.1	6.3		9.5	58.5	18.0		9.3	51.3	35.5		9.5	9.8	16.3	B
9.4	57.2	46.7		9.5	19.1	32.8		9.5	33 1.0	33.2		8.8	42 8.4	31.6		9.4	12.0	9.1	
9.5	17 19.1	14.3		9.0	23.3	17.2		9.2	1.3	43.9		9.5	13.5	4.7		9.5	20.4	22.1	
9.5	20.3	45.6		9.4	25.4	12.5		8.6	2.5	52.1	K	8.3	19.3	33.5	B	8.8	27.8	33.2	
9.5	25.9	21.3		9.5	25 6.0	35.6		8.7	14.2	33.3		9.5	20.4	4.9		9.4	28.6	21.9	
9.4	26.4	38.8		8.9	6.3	45.9		9.5	22.5	59.1		9.3	28.0	58.3		9.5	29.0	45.5	
9.4	27.1	39.8	B	9.5	30.3	17.5		9.3	22.8	48.0		8.3	35.2	35.1		6.0	30.5	36.7	L
9.5	33.0	13.1		9.0	34.8	5.9		9.3	25.0	40.6		9.3	43.5	49.2		9.2	38.3	29.3	
9.5	42.5	14.3		7.9	26 10.2	23.9	S	8.6	31.3	59.9	K	9.4	50.1	7.5		9.4	47.3	37.2	
8.5	48.9	58.5	K	8.0	13.2	24.2		9.5	49.0	19.9		7.6	43 1.3	48.4	L	9.4	58.6	11.4	B
9.2	55.5	14.7		9.5	14.9	40.5		9.5	51.1	2.0		9.3	1.3	47.2	B	9.5	50 1.2	59.2	
9.4	18 11.5	59.8		9.5	19.9	43.7		8.0	34 0.8	42.9		9.3	7.9	10.5		9.3	8.0	5.5	
9.4	22.0	36.0		9.5	20.4	43.2		9.4	3.0	54.3		9.4	9.4	57.4		9.4	13.5	33.2	
9.0	24.1	48.9		9.2	27.4	11.1	K	9.5	15.6	58.8		9.5	21.3	43.7		9.5	25.7	54.7	
9.2	25.7	6.6		9.5	29.0	35.8		9.5	17.5	20.2		9.3	27.8	10.5		9.0	48.5	19.9	
9.2	31.4	53.4	K	8.9	39.4	16.0	K	8.2	21.4	44.7		8.3	32.6	42.4		8.8	51.9	33.7	B
9.3	38.9	39.4		9.4	44.8	48.0		8.3	22.8	10.8		9.5	52.5	7.2		9.0	52.3	10.7	
9.0	47.3	3.7		9.5	50.3	18.6		9.3	50.3	38.0		9.4	53.5	4.3		9.2	51 25.0	24.9	
8.9	50.0	16.1		9.3	57.4	11.2	K	9.5	35 0.9	16.5		9.5	44 3.7	59.2		9.3	88.6	43.2	
6.7	53.9	10.1	K	9.1	27 12.2	19.4		9.5	27.1	1.0		9.4	13.0	35.7		9.4	44.8	28.1	
9.5	56.8	29.3		9.0	16.3	8.1	K	9.5	31.3	18.9		9.2	23.6	5.8		9.5	46.1	18.0	
9.1	19 1.9	16.6		9.0	20.8	30.8		9.5	32.5	6.5		9.0	50.3	29.3	K	9.5	50.1	52.1	
8.9	15.0	2.0		9.0	21.1	22.5		9.5	42.0	30.1		8.9	54.5	13.5		9.4	51.9	22.7	
7.8	22.2	54.7	L	9.5	30.9	11.3		9.5	50.1	20.0		9.5	57.7	45.4		9.5	55.1	54.1	B
9.1	24.0	11.3		9.5	38.5	48.9		9.4	55.3	51.4		9.5	59.2	25.1		9.2	52 0.0	46.2	
8.1	27.8	50.9		9.4	42.8	26.7		9.5	36 5.7	47.5		9.0	45 10.6	6.1		9.4	6.5	10.6	
9.5	43.6	36.2		9.5	49.0	37.3		9.5	26.2	10.3		9.4	18.2	53.2		9.4	6.6	4.4	
9.5	44.5	26.7		9.4	56.0	42.7		8.5	35.3	46.3		8.8	21.4	48.0	K	9.5	9.7	51.4	
9.4	47.4	28.1		9.2	28 8.4	11.4	K	8.7	40.4	54.5	K	8.6	33.0	38.2	K	9.2	19.0	38.7	
8.4	58.9	50.4	L	8.8	48.0	38.5		9.5	45.8	38.7		9.4	39.7	24.4	B	9.5	29.4	9.3	
7.0	20 9.4	57.6	K	8.5	58.3	19.3	K	8.7	52.1	0.7		9.5	44.4	20.9		9.5	31.2	21.4	
9.0	23.3	11.3	R	9.5	29 1.0	27.1		9.5	37 24.3	30.3		9.5	50.1	17.1		8.7	33.5	59.2	
9.5	24.5	2.6		8.5	1.4	14.6	K	9.3	43.2	52.3	B	9.5	51.7	36.5		9.2	53 4.3	48.3	
9.5	31.4	11.2		8.8	11.9	43.5	K	9.5	47.5	46.0		9.5	51.9	21.0		9.4	13.0	29.3	
8.6	31.5	41.2		9.4	51.9	14.1		9.5	38 35.7	30.8		9.4	52.2	39.0	B	8.2	16.0	33.3	B
9.5	36.0	26.9		9.5	57.1	38.1		9.3	36.2	14.7		8.4	58.6	0.0	B	9.4	32.3	32.8	
9.5	52.9	50.0		9.5	57.3	19.5		9.3	43.3	41.1		9.4	46 14.3	33.5		9.4	33.3	33.2	B
5.0	55.5	1.9	L	9.2	30 15.2	21.7		9.5	50.2	50.8		8.7	15.8	56.0	K	9.4	33.6	0.3	
9.5	21 26.0	36.3		9.5	20.1	5.2		9.4	54.9	43.8	B	9.4	16.6	1.7		8.7	40.1	46.3	
9.5	43.3	44.4		6.0	35.7	37.3	K	9.2	39 15.4	10.5		9.5	18.7	35.0		9.0	44.4	4.8	
9.5	47.1	3.7		9.4	39.5	53.5		8.7	21.6	21.8	K	9.3	24.8	1.9	B	9.5	47.2	52.9	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ᵘ	+36°			19ᵘ—20ᵘ	+36°			20ᵘ	+36°			20ᵘ	+36°			20ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	53 48.1	32.8		9.1	59 59.9	28.6		9.4	5 24.1	20.0		9.0	11 12.9	55.6		9.4	17 25.8	53.4	
9.4	55.4	8.8		9.5	0 5.5	34.2		9.2	35.8	55.4	K	9.2	13.0	2.2		9.5	29.4	12.9	
9.5	54 18.3	53.0		9.5	11.3	29.7		9.1	37.0	16.0		8.2	24.1	42.7	K	9.4	48.1	22.6	
9.4	20.4	18.9		9.4	20.9	6.3		9.4	54.0	9.6		9.5	28.9	13.2		9.4	50 6	38.7	
9.5	29.0	9.0		9.5	22.6	41.6		9.2	57.9	55.7	K	9.4	32.9	8.6		9.4	53.5	12.8	
5.8	36.1	38.7	K	9.1	24.1	53.5		8.5	57.9	26.5		8.2	33.3	45.3	K	9.3	58.0	9.5	
7.0	49.4	1.0	B	9.5	30.9	34.1		9.0	6 1.6	4.2		8.1	37.0	58.6	B	9.2	59.9	25.7	
9.5	51.1	23.8		8.8	40.7	25.8	K	9.4	11.8	55.7		9.5	37.2	15.2		9.4	18 8.0	50.5	
9.4	59.7	3.2		9.2	41.6	31.5		9.5	21.7	50.8		9.5	52.4	26.5		8.5	8.2	27.8	B
9.5	55 4.1	16.4		9.5	53.1	17.4		9.5	29.9	56.4		9.5	57.2	26.1		9.0	20.3	3.3	
9.3	5.4	8.0		9.5	53.2	25.5		9.3	37.7	33.3		9.1	12 6.1	51.9	K	6.8	21.4	33.6	K
9.0	11.6	44.1		9.5	1 1.5	36.4		9.4	7 2.6	14.5		9.3	7.0	36.0		8.6	33.4	32.5	
9.5	18.4	17.6		8.6	1.6	19.0	K	8.2	19.5	13.0	K	9.5	32.5	14.8		9.5	42.6	41.3	
9.2	18.5	10.5		8.9	10.6	54.0		9.5	22.0	50.6		7.7	37.1	43.3	K	8.9	47.2	52.3	
8.7	21.4	10.5		9.5	12.9	35.2		9.5	37.9	35.0		8.3	41.9	7.3	K	9.5	59.3	50.1	
7.0	23.7	11.6	L	8.7	34.8	53.3		9.5	39.6	3.5		8.5	42.5	13.5	K	9.3	19 3.4	5.3	
9.5	36.9	47.5		8.9	35.3	51.0		8.6	46.1	17.5	K	9.1	56.9	0.7		8.6	16.7	35.5	K
8.5	37.1	42.8		9.2	40.0	37.1		9.5	53.9	8.3		6.1	13 2.6	33.0	L	9.2	33.6	7.4	
9.5	48.3	48.9		8.8	40.6	26.2	K	9.5	58.9	40.9		9.5	15.5	13.2		9.5	36.8	6.4	
6.7	55.8	42.0	P	7.0	44.2	24.6	K	9.5	8 4.4	51.0		9.4	22.7	48.1		9.5	39.3	2.8	
9.3	56 18.4	5.0		9.3	47.1	39.2		8.8	9.0	14.0	K	9.4	26.8	30.6		9.5	55.9	5.0	
8.8	21.2	23.5		9.2	2 1.4	8.3		9.5	15.2	59.3		9.5	30.4	20.3		9.5	20 9.2	0.2	
9.5	25.3	49.8		7.1	2.9	8.9	B	8.2	16.5	3.0	B	9.5	32.9	15.1		9.2	13.8	54.5	
9.5	27.9	5.3		9.5	6.2	45.1		9.4	22.8	59.7		9.3	40.5	56.4	B	9.2	14.9	30.9	
9.5	39.1	19.9		9.0	12.8	54.2		8.7	24.3	51.9		7.6	40.6	18.1	K	8.6	15.3	40.8	
9.5	50.9	6.7		8.9	13.8	30.8	K	8.5	24.6	11.2	K	9.0	50.9	8.2		9.0	27.0	59.0	
9.5	55.7	41.5		9.2	19.8	27.4		8.9	33.6	6.3		8.9	14 16.3	40.3	K	9.0	36.7	26.2	
9.0	56.7	1.0	B	9.3	20.1	32.4		9.5	36.4	21.9		7.0	23.3	40.5	K	8.4	45.3	43.2	
9.5	57 0.0	32.1		9.5	35.0	13.2		7.0	38.9	10.0	K	8.5	32.4	57.1	K	9.0	48.7	59.3	
9.1	8.4	59.2		9.5	43.3	48.4		9.2	41.1	40.3		9.1	34.9	7.0		9.5	21 2.9	37.4	
9.5	23.1	8.6		8.8	46.4	35.4	K	9.4	43.7	58.1		9.5	35.4	50.9		9.0	3.4	29.6	
9.5	27.0	59.4		8.3	48.0	15.0	K	8.9	54.3	42.5		9.3	35.9	47.1		8.2	8.6	6.9	K
9.5	41.1	37.0		9.4	51.2	40.3		9.5	54.5	55.3		9.5	38.3	4.7		9.1	15.7	12.1	K
9.5	41.4	6.8		9.5	3 6.7	27.3		9.0	56.3	30.3		9.5	52.5	23.5		9.5	16.8	53.8	
8.7	46.1	29.3		9.5	7.9	22.6		5.4	9 6.2	22.1	K	9.3	56.9	53.2		8.8	23.3	51.5	
8.9	46.6	19.8		8.4	12.5	15.2	K	8.0	6.7	13.3	K	9.5	15 2.5	25.7		9.5	37.4	5.1	
9.5	49.0	14.5		9.1	16.1	5.7		9.5	8.6	56.9		8.8	19.0	36.1	K	9.5	37.6	2.7	
9.5	57.9	7.1		9.5	22.0	45.3		7.5	8.8	54.7	K	9.5	23.8	50.0		9.5	54.9	54.7	
8.6	58 7.7	34.9		9.3	22.3	56.1	K	7.0	14.2	19.1	K	8.5	26.2	59.1		9.5	54.9	4.3	
8.9	16.9	55.8	K	8.5	25.2	48.9	K	9.5	30.0	0.3	B	8.4	29.4	29.0	K	9.5	55.0	57.7	
8.0	18.1	1.2	K	9.5	38.7	53.0		9.3	32.4	56.2		9.1	37.7	53.6		9.5	22 5.4	33.0	
9.4	20.2	16.7		9.5	46.4	43.6		8.1	40.0	57.0	K	9.5	37.9	21.0		9.2	5.6	29.5	K
9.2	20.9	26.1		9.5	46.4	31.8		9.5	46.3	25.2		9.5	46.9	21.0		9.3	16.5	48.1	
9.2	27.5	26.5		9.2	51.9	53.8	K	8.8	46.8	49.6		8.9	50.4	56.9		8.8	19.4	1.2	
9.5	30.6	43.9		9.3	4 0.9	4.3		9.4	47.0	12.6		9.5	54.3	28.4		9.5	31.4	30.1	
9.5	32.9	51.5		8.5	1.4	3.8	B	9.5	56.9	10.9		9.5	58.5	46.3		9.0	32.6	23.3	
9.5	41.0	13.4		5.5	3.0	25.1	K	9.1	10 7.4	53.2		8.7	16 4.1	41.9	K	9.4	53.6	42.6	
8.1	46.7	46.6		9.5	3.6	54.2		9.5	9.7	23.4		9.5	4.5	27.5		9.0	23 0.5	28.5	
9.5	51.3	42.4		9.2	7.8	24.5		9.3	10.7	47.1		9.4	6.0	9.3		9.2	15.7	21.0	
9.5	52.9	19.3		9.3	14.6	59.4	K	9.5	23.3	40.8		9.1	9.1	3.1		9.3	25.9	5.9	
9.0	59 0.5	35.2		9.2	21.3	3.2		9.3	27.8	28.1		9.2	11.4	55.9	K	9.4	35.6	32.7	
8.7	6.0	24.8	K	9.2	22.9	7.4		9.3	36.2	48.3		9.5	12.4	57.9		9.5	37.3	16.7	
9.5	10.3	53.4		9.4	27.9	33.3		8.8	36.7	23.2	K	9.5	25.9	23.6		9.5	49.3	3.0	
9.0	12.1	16.3		8.6	36.6	16.5		9.5	50.4	20.3		9.5	30.8	53.7		9.3	58.9	9.2	
9.5	18.4	49.2		9.5	37.2	43.2		9.5	50.6	49.5		9.5	17 5.8	28.0		7.5	24 18.6	30.1	K
9.5	20.3	2.9		8.0	38.9	33.2	K	9.1	57.0	37.5		9.5	6.3	54.6		9.5	21.0	34.2	
9.5	29.9	16.3		9.1	48.3	18.8		9.2	58.1	40.4		9.5	11.6	24.0		8.1	22.9	5.3	K
9.5	39.6	42.3		9.0	52.8	6.2		6.6	11 3.7	36.6	K	9.5	15.2	35.2		9.3	32.0	9.4	
9.1	44.1	15.5	K	9.5	5 14.9	53.0		8.5	8.3	24.8		9.5	20.9	4.2	B	9.3	33.6	7.4	
9.4	49.0	16.1		8.0	22.0	37.0	L	8.2	8.9	30.1	K	8.2	24.3	58.3	K	8.7	33.6	37.2	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵐ	+36°			20ᵐ	+36°			20ᵐ	+36°			20ᵐ	+36°			20ᵐ	+36°	
m		′		m		′		m		′		m		′		m		′	
8.2	24 39.9	41.0	B	9.4	32 58.5	23.2		8.2	39 39.3	53.0		9.4	45 38.0	37.2		9.5	52 26.0	17.0	
9.5	50.1	18.9		9.5	33 27.1	31.2		9.5	50.3	26.3		8.5	44.4	28.8		9.0	28.2	25.1	
9.2	25 0.2	50.4		9.5	38.9	6.9		9.1	57.1	40.2		8.4	52.6	44.8	K	9.4	51.1	29.0	
9.1	27.6	43.0	K	9.4	46.7	6.8		8.9	40 5.8	15.3		9.5	57.9	0.5		9.5	51.5	20.1	
6.3	28.5	26.9	K	9.5	47.9	3.8		9.5	16.4	44.9		8.9	46 6.1	1.5	B	9.0	56.0	29.0	
9.5	29.4	15.1		9.2	57.5	12.2		9.5	27.2	6.7		9.1	16.3	56.9		9.5	56.7	49.0	
9.5	34.4	41.6		9.5	58.6	5.6		9.3	40.8	14.4		9.5	27.2	11.9		9.2	59.0	45.4	
9.5	42.3	41.6		9.2	58.7	45.0		9.5	41.4	16.3		9.5	30.8	52.7		8.7	59.0	25.3	
9.4	53.1	40.8	B	9.5	34 4.6	39.3		9.5	46.8	15.4		8.3	33.9	58.5	K	9.4	59.4	23.3	
9.0	57.6	2.3	K	9.0	4.8	27.2		9.2	50.0	56.4		9.5	52.7	52.4		9.5	53 1.9	55.1	
9.4	26 4.2	35.6		9.4	19.1	17.8		9.5	53.3	27.6		9.5	55.9	7.6		9.4	4.1	12.7	
9.4	17.9	33.6		9.2	20.9	7.7		9.3	57.6	32.5		8.2	57.1	22.1	B	9.4	4.1	10.4	
8.1	33.6	53.3	K	9.3	20.9	32.8		8.5	41 9.8	56.4	K	9.5	47 9.1	12.6		9.5	18.7	49.3	
9.0	38.2	19.5	K	9.2	21.3	40.9		9.0	21.3	31.0		9.5	23.4	4.3		9.4	27.9	34.3	
9.0	38.7	24.6		9.5	30.9	58.1		9.5	24.0	11.5		9.5	25.7	26.8		8.0	38.2	11.4	K
9.5	44.4	34.9		9.4	34.4	16.0		9.4	26.7	38.0		9.4	37.3	6.0		9.2	40.0	4.6	
8.9	46.0	57.2	K	9.3	34.4	14.4		9.4	30.1	24.5		9.4	48.0	49.5		9.4	46.9	28.7	
9.0	49.6	57.1		9.4	58.6	41.0		9.1	34.8	23.9	B	9.1	51.4	7.3		9.3	55.5	29.6	
9.4	51.3	2.2		8.1	35 4.3	53.0	K	9.3	37.0	14.7		9.2	51.7	12.3		9.3	54 0.3	2.8	
9.5	54.2	13.0		9.4	7.8	4.9		9.3	37.5	57.8		9.1	53.9	41.3		9.5	2.7	34.6	
9.2	27 10.4	8.6		8.8	9.7	23.8		9.5	42.4	8.0		9.1	55.7	9.5		9.4	6.8	3.1	
9.5	12.8	53.7		8.3	21.0	40.3		9.1	45.7	56.1	B	9.5	57.8	58.6		9.4	11.5	12.8	
9.3	13.4	41.4		8.6	24.1	42.5		9.2	46.4	54.1		9.3	48 2.5	37.9		9.5	11.7	49.0	
9.5	31.3	41.3		9.3	26.8	58.4		9.1	58.9	32.2		9.5	9.3	28.4		9.5	20.4	3.8	
9.2	36.8	24.5	K	7.9	28.4	30.9		9.2	42 9.7	38.5		9.0	9.7	50.9	K	7.5	31.7	24.4	K
9.5	47.9	32.8		9.4	38.2	50.4		9.2	10.3	36.6		9.2	9.9	32.5		7.5	55 13.8	48.1	K
9.5	56.7	3.4		9.5	41.2	22.0		9.5	16.4	1.0		9.0	19.9	21.2		9.4	16.7	29.1	
9.5	28 7.0	45.9		9.4	50.9	54.6		9.5	19.4	45.5		9.4	25.8	28.5		9.0	18.5	55.5	
9.1	10.2	51.2		9.5	54.4	32.8		8.8	27.4	40.3		9.2	36.0	32.0		9.5	25.4	27.6	
9.1	27.7	49.9	B	9.4	54.9	7.5		9.5	38.9	55.4		9.0	38.2	24.8		9.0	34.8	23.1	
9.2	32.5	47.4		8.9	36 0.6	6.7		9.4	39.5	1.7		9.5	52.3	0.7		9.2	35.5	19.5	
8.9	37.9	26.0		9.0	2.0	35.7		9.5	39.7	14.5		9.4	56.4	4.6		9.4	36.8	28.6	
9.3	39.3	59.2		9.1	4.8	53.0		7.9	46.4	21.6	B	9.4	49 0.5	24.3		9.5	46.7	52.6	
9.2	42.2	6.3		7.9	6.5	14.8	B	8.6	49.1	17.3	K	6.5	2.8	31.5	K	9.5	56.9	11.7	
9.5	53.5	55.0		8.6	8.7	6.6		9.3	43 6.8	18.8		9.5	3.4	40.2		7.5	56 14.4	7.8	B
9.2	53.5	48.1		8.8	9.8	30.3		9.0	18.6	20.7	K	9.5	11.3	8.7		7.8	17.4	24.1	B
9.3	29 7.3	50.4	B	9.0	15.0	1.9		9.5	25.4	8.8		8.9	13.2	14.2	K	9.4	49.6	46.5	
9.2	34.7	58.9		9.5	17.9	14.9		8.5	32.9	59.3		9.5	13.4	19.4		9.5	57 7.0	23.8	
7.9	38.6	21.2	K	9.4	19.3	58.4		9.4	38.1	43.0		9.4	14.7	36.4		7.5	7.0	34.7	K
9.5	44.4	58.1		9.5	28.7	35.0		8.9	39.0	2.0		9.5	34.5	11.4		9.2	12.5	57.6	
9.5	30 13.4	17.7		9.5	36.3	59.6		9.5	41.6	24.2		9.5	42.8	7.1		9.5	16.3	38.8	
9.3	20.6	42.5		9.1	39.4	5.0		9.5	47.4	34.0		9.5	46.4	42.5		8.0	27.1	11.1	K
9.0	25.1	2.6		9.5	37 6.2	8.1		8.5	56.5	20.1	K	9.4	50 0.3	55.7		9.0	41.7	34.5	
8.4	25.4	32.7	K	9.5	25.6	12.8		9.5	44 10.4	22.9		9.0	5.8	4.5		9.5	55.3	28.9	
8.5	48.6	55.3	K	9.5	26.1	13.2		9.5	13.7	45.2		9.5	23.7	35.6		9.5	55.8	23.8	
9.5	54.2	21.4		9.4	32.6	43.0		9.5	29.1	42.6		9.0	39.8	12.5		9.5	58 0.3	25.6	
9.5	31 2.0	35.2		9.5	48.9	51.5		9.1	32.6	59.0		8.5	41.3	55.4		9.5	18.8	6.5	
9.5	13.2	11.2		9.4	50.0	34.0		9.2	37.0	36.5	B	9.3	42.3	5.8		9.5	22.8	23.4	
9.5	34.5	53.5		8.9	38 8.0	56.7		9.5	40.4	40.0		9.1	46.8	23.0		8.5	35.4	49.2	
7.4	34.5	4.8	K	9.5	9.8	0.0	B	9.5	47.5	3.0		8.5	51 2.7	48.5		8.6	56.7	35.2	
8.8	35.1	3.0	K	9.0	20.2	21.0		9.5	49.6	24.1		8.6	3.6	35.5		9.2	59 1.8	50.0	
9.4	35.2	14.6		9.0	31.5	57.5		8.6	53.4	31.9		9.0	22.8	28.6		9.4	3.7	33.5	
9.5	47.9	28.6		9.2	31.9	7.5		8.4	45 0.3	0.6		9.3	25.1	38.7		9.5	11.9	0.0	
8.5	55.3	50.3		8.6	36.0	35.6		9.2	2.5	37.6		9.5	36.0	44.8		9.1	13.0	9.3	
8.8	32 9.9	48.3		7.9	46.0	11.6	L	8.7	11.4	8.4		8.6	44.8	36.0	K	8.8	25.3	32.5	
9.4	18.6	34.4		9.4	48.2	47.8		9.0	16.4	19.5		9.5	47.7	27.0		9.4	26.7	13.3	
9.4	39.2	37.6		9.2	54.4	10.0		9.5	20.0	43.8		9.5	50.7	31.9		9.1	32.0	59.7	
9.5	39.5	14.7		9.5	39 10.1	0.0	B	9.4	20.2	46.8		9.3	59.6	35.1		9.4	37.1	53.5	
9.4	44.1	3.0		8.3	22.5	49.4		9.4	29.7	38.0		9.5	52 4.3	5.9	B	9.5	38.7	38.2	
9.5	57.3	50.6		9.3	37.0	12.5		9.5	37.5	9.0		8.9	14.4	50.5		9.5	42.9	4.4	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	20ᵘ—21ᵘ	+36°			21ᵘ	+36°			21ᵘ	+36°			21ᵘ	+36°			21ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	59 47.0	28.5		9.4	6 40.3	43.9		9.5	14 36.2	37.2		9.5	23 26.0	2.5		9.1	34 40.3	8.9	
8.7	48.6	20.9		9.4	45.4	10.3		8.5	42.8	0.5	L	9.1	26.6	6.5		8.8	48.3	37.6	
9.0	0 3.0	43.2		8.9	47.7	18.3		9.1	48.1	4.7		9.5	42.5	4.7		9.4	59.1	41.5	
9.5	6.8	18.6		9.4	55.8	20.8		9.5	51.8	25.0		8.5	44.2	10.0	K	8.8	35 0.2	15.2	
8.6	7.4	38.8		8.3	58.6	48.7		9.5	59.0	30.4		9.5	44.6	19.1		9.5	15.7	24.8	
9.5	10.1	51.0		8.8	7 13.8	56.8		9.1	15 23.0	2.4		9.5	55.0	28.5		8.3	17.1	1.0	K
9 5	33.2	5.0		9.5	20.2	8.0		9.5	31.3	58.9		8.4	58.3	9.0	K	8.8	28.8	26.2	
9.5	45.7	13.5		8.2	28.0	30.4	R	9.3	41.9	53.4		9.5	24 10.5	45.1		9.5	51.5	22.6	
9.3	46.4	20.9		9.0	32.3	58.0		9.4	49.0	18.0	B	9.3	15.4	41.1		9.5	36 0.3	11.9	
9.0	53.6	6.8		6.5	37.7	2.3	K	9.2	55.6	45.0		9.5	20.7	51.2		8.0	1.0	14.1	K
9.5	56.0	40.6		9.1	55.9	55.7		9.0	16 28.4	56.4		9.5	28.0	23.4		7.5	6.9	53.4	K
9.5	1 9.3	59.3		9.5	59.5	13.9		9.4	29.2	6.8		9.1	33.5	17.6		9.5	13.4	55.2	
9.5	9.6	57.6		9.5	8 0.2	35.4		7.0	32.1	33.2	K	9.5	50.5	15.0		9.4	15.0	59.8	
9.5	21.2	50.0		9.4	0.4	56.4		8.4	34.0	1.3	K	9.5	55.8	58.0		8.5	21.8	14.4	K
9.5	23.0	12.5		9.4	11.9	54.2		9.5	17 8.1	9.7		9.2	25 9.5	13.7	B	9.0	24.0	28.2	
7.8	26.7	22.3	K	9.5	18.8	44.3		9.5	20.3	9.5		9.5	37.0	53.9		9.2	34.5	44.6	
8.6	34.2	36.9		9.5	19.7	50.3		6.3	30.6	47.0	K	9.5	45.3	50.9		8.7	45.4	12.7	
9.2	38.3	56.8		9.5	30.0	47.7		9.5	31.2	5.5		9.5	45.8	52.2		9.1	45.6	48.0	
9.2	56.3	5.5		9.5	31.5	53.0		9.0	35.8	24.3		9.5	51.7	24.8		9.5	49.7	49.5	
9.2	58.1	13.2	K	9.5	33.0	0.5		9.4	39.5	17.9		9.5	26 1.4	54.7		9.0	54.8	54.4	K
9.2	2 4.0	43.1		9.4	40.2	53.4		9.2	47.9	1.4		9.2	3.5	2.5		9.2	57.7	52.9	
8.5	15.4	20.1		8.3	47.0	30.7		9.5	48.2	6.6		9.4	27 3.7	7.7		8.4	59.1	32.9	
9.5	26.0	29.2		9.2	50.0	54.8		6.0	55.6	43.8	K	9.5	23.1	3.7		9.1	37 36.1	5.0	
9.5	31.8	32.4		9.4	50.0	10.2		9.5	18 18.7	57.0		9.5	26.0	47.9		9.1	46.4	22.8	
9.2	38.3	13.1		9.5	9 2.5	17.6		8.4	23.2	9.7		9.5	36.3	6.3		9.5	55.0	4.0	
9.3	43.4	35.3		9.4	5.7	21.3		9.3	26.7	38.8	B	8.5	36.9	59.3	K	9.4	38 2.5	22.0	
9.5	3 11.3	24.0		9.3	6.4	13.9		8.0	31.8	22.3		9.5	44.0	1.4		9.5	16.4	43.0	
9.5	21.6	3.3		9.3	7.3	25.7		9.1	37.8	21.3		9.1	53.2	36.0		9.5	31.2	4.8	
9.3	24.9	53.4		9.5	36.1	57.8		9.5	55.9	27.7		9.4	28 5.3	16.2		8.5	41.6	17.6	K
9.5	30.8	59.0		9.1	40.4	42.7		9.4	55.9	18.3		9.2	32.9	13.3	B	9.5	47.1	21.8	
9.4	33.2	57.5	B	9.1	42.2	35.1		9.5	19 0.7	22.4		9.5	53.4	10.8		8.3	54.8	52.2	
9.5	39.6	21.3		7.2	45.3	39.3	K	9.0	12.3	38.2		9.5	29 28.1	2.6		9.5	58.4	11.0	
9.5	41.0	5.1		8.5	46.0	13.8	K	9.5	19.3	8.6		9.0	30 21.2	55.6		9.4	39 15.7	54.7	
9.5	49.6	56.1		9.5	10 14.2	34.9		8.5	21.2	4.4		9.5	34.5	4.7	B	8.0	30.5	43.8	K
9.5	54.7	30.0		8.5	23.7	48.0	K	9.2	25.3	38.0		8.8	41.1	32.4		8.0	40 9.8	43.7	K
9.1	4 2.1	11.2		9.2	44.8	14.9	K	9.3	44.2	6.5		9.1	49.5	16.8		9.4	15.5	12.3	
8.7	4.4	24.3		9.5	52.3	21.8		6.0	52.0	2.4	K	9.5	31 7.8	53.3		8.8	30.8	16.1	
9.2	5.8	4.3		9.5	53.0	55.1		9.4	58.6	47.5		9.5	28.6	38.5		9.5	40.7	19.8	B
9.4	15.7	31.5		9.5	11 0.9	26.7		9.4	20 5.8	8.6		9.2	29.3	11.6		7.7	43.9	59.4	K
9.1	24.2	57.4		9.5	17.4	41.5		9.5	12.7	24.3		9.5	36.1	33.2		8.0	41 1.8	39.2	
9.5	24.6	26.5		9.5	24.0	55.1		9.1	25.9	55.2		9.2	36.9	25.8		9.5	26.3	43.9	
9.3	26.4	50.6		9.3	25.8	49.7		9.5	49.1	26.7		9.5	52.7	24.3		9.4	42 4.7	34.0	
9.2	26.4	58.7		9.5	35.1	34.9		9.1	52.8	54.7		9.5	32 11.7	15.7		9.5	9.3	26.5	
9.5	27.3	34.0		9.4	40.9	14.5		7.5	55.6	52.7	K	9.5	12.3	37.9		8.7	43 15.0	37.2	
9.2	35.9	3.0		9.4	44.6	45.3		8.4	21 4.1	7.0	K	9.1	14.5	47.9		8.0	17.0	25.5	
7.5	44.6	12.6	K	9.4	50.8	25.7		8.0	13.5	19.1	K	9.4	18.0	30.4		9.2	21.0	6.8	
7.9	56.9	53.8	K	9.5	12 11.6	1.6		9.1	16.0	29.2		9.5	21.7	14.1		9.2	30.5	35.7	
9.5	5 4.0	58.2		9.5	34.9	52.1		5.0	26.0	29.5	K	9.2	51.1	33.7		9.5	44 5.8	56.0	
7.6	24.3	4.0	K	9.0	35.5	35.3	B	9.4	35.7	35.4		9.5	53.6	53.9		9.5	18.7	23.6	
9.4	30.5	56.3		8.4	40.4	9.6	K	9.5	37.8	24.8		8.9	33 2.4	13.0		9.5	19.2	31.2	
9.3	31.0	9.6		9.4	57.0	50.4		9.1	54.2	29.9	B	9.3	9.8	43.2		8.0	25.4	54.8	B
9.4	49.5	58.6		9.5	13 20.2	2.3		9.3	55.9	55.4		9.5	15.2	43.8		9.5	46.2	3.2	
9.5	49.5	2.5		8.5	34.3	37.9		9.1	22 4.2	41.0	B	9.5	15.2	54.5		9.2	48.0	52.5	
9.0	6 0.9	15.3		8.7	56.8	50.2		9.5	11.6	56.1		9.5	17.0	53.9		9.2	45 4.1	56.6	
9.5	4.0	30.0		9.0	14 8.5	30.8		9.5	31.8	24.8		9.2	34.1	10.9		8.8	29.7	15.9	K
9.3	19.8	16.3		9.4	9.4	50.8		9.1	40.6	46.8		9.5	34 3.9	27.5		9.5	48.7	55.4	
8.6	23.8	50.5		9.5	9.7	37.8		9.5	40.7	50.5		9.4	16.5	19.3		9.5	53.2	32.8	
8.5	24.4	28.3		9.1	19.5	44.7		9.5	41.0	5.4		9.5	22.6	0.2		9.3	46 16.3	21.0	
9.2	29.2	18.5		9.5	21.6	46.4		9.5	57.1	8.7		9.5	32.4	41.0		9.0	22.7	39.4	
9.3	36.5	0.9		8.0	22.2	10.9	L	8.0	23 7.3	56.8	K	9.5	36.1	31.9		9.5	40.0	8.6	

4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
	21ᵘ—22ᵘ	+36°			22ᵘ	+36°			22ᵘ	+36°			22ᵘ	+36°			22ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	47 8.2	29.0		9.0	0 35.0	44.4		9.5	16 5.0	38.6		9.4	30 0.0	1.7		9.1	44 27.2	55.3	B
8.5	48.3	42.6		9.5	39.3	58.6		9.0	6.8	52.5	K	8.0	6.5	58.4	K	8.8	38.0	8.4	K
9.5	52.8	58.0		9.3	42.0	44.4		9.2	16.4	10.8		8.8	15.2	30.1		9.1	41.6	1.7	K
9.5	48 5.2	12.4		9.5	50.4	48.9		8.8	30.3	34.6		9.4	23.5	55.5	B	8.4	54.8	2.9	K
9.4	38.5	29.7		9.5	1 19.5	47.5		8.6	34.0	39.1	B	9.5	25.7	59.5		8.7	45 4.2	16.4	L
9.5	43.2	44.3		9.2	29.2	25.7	K	9.4	34.5	33.4		9.5	31.5	57.8		9.5	21.6	41.3	
9.3	57.0	5.5		9.0	32.7	54.9	B	9.0	18 58.2	16.3		9.0	32.5	27.0		9.5	46.8	44.1	
9.5	49 8.4	22.8		9.5	2 26.0	26.0		9.5	59.8	45.5		9.5	46.8	14.9		9.4	53.7	13.6	
8.8	9.7	14.8	K	8.9	37.0	56.9	K	9.1	19 1.8	10.4		9.3	31 2.7	16.0		8.5	46 12.4	39.9	
9.0	37.9	35.6		9.4	39.3	24.3		9.4	19.5	7.2		9.2	12.2	55.8	B	9.5	26.9	29.1	
9.1	50.2	30.4		9.0	47.9	2.5	K	9.5	29.9	17.3		9.5	26.6	57.3		9.0	36.3	5.9	
8.2	50 14.5	10.2	K	8.5	53.2	43.3	K	8.2	58.5	23.2	K	9.5	34.9	1.8		9.0	47 12.2	15.3	
9.4	17.7	19.0		9.1	3 5.4	8.3		9.5	20 12.6	8.5		9.5	44.8	16.4		9.0	16.5	35.0	K
9.0	27.2	40.1		8.3	4 20.0	23.3	K	7.5	14.1	1.9	K	9.5	32 7.1	2.4		8.7	18.5	7.3	K
9.5	51.1	2.0		9.5	33.8	36.4		6.5	21.5	43.3	S	8.5	9.8	32.6		9.4	52.8	36.8	
9.0	54.3	56.1		9.5	35.3	59.0		9.5	29.1	0.2		8.9	19.9	9.6	K	5.9	48 18.5	19.3	K
9.5	51 16.0	47.4		9.5	38.3	2.4		9.5	51.9	27.1		9.5	21.5	56.1		9.4	28.5	36.3	
9.4	30.1	1.5		9.5	41.1	48.0		9.5	21 8.5	57.5		6.3	33.6	37.1	L	9.2	35.2	23.3	
8.8	30.7	21.0	K	9.4	46.5	52.8		7.8	49.7	37.2	K	8.0	57.1	9.7	K	9.0	59.1	36.9	B
8.5	32.2	36.6		8.0	55.1	34.0	K	7.7	51.1	24.1	B	7.3	58.5	58.5	L	9.3	49 40.6	22.0	
9.5	35.5	56.8		9.5	5 16.9	43.8	B	9.2	58.3	24.3	B	6.5	33 0.1	34.7	K	9.5	48.3	54.7	
9.0	44.7	16.3		9.4	17.3	0.0		8.1	22 2.7	43.4	K	6.0	2.0	50.3	L	9.4	54.5	49.2	B
9.3	53.4	4.4	B	9.4	29.9	8.3		9.2	4.1	3.2		7.8	3.5	37.5	K	9.4	50 9.2	20.6	
9.3	56.8	8.4		9.5	37.4	4.5		9.0	18.2	21.1		9.3	16.8	22.7		9.5	17.1	23.4	
9.5	52 28.7	11.2		7.5	44.4	56.9	K	9.5	30.8	36.4		7.8	37.4	47.2	L	9.2	21.3	4.1	
9.3	37.6	24.1		9.1	6 35.3	22.8		9.5	23 1.7	12.8		9.5	34 3.7	23.3		9.5	24.6	8.6	
8.0	49.1	34.5	K	9.1	43.7	9.8		9.6	24.3	51.3		9.5	7.9	30.9		9.3	33.8	12.3	B
9.5	53 16.5	23.8		9.0	7 27.2	20.2		9.4	30.2	5.5		8.5	23.2	2.0		9.0	40.4	31.7	
9.0	38.4	29.3		7.2	8 1.3	7.1	K	9.4	44.8	42.8		7.6	27.6	19.4	K	9.2	50.1	12.0	B
9.5	38.5	11.8		9.4	30.1	0.9		9.5	54.0	21.9		9.2	54.2	30.6		7.5	52.1	37.2	K
9.5	59.5	59.4		9.5	57.8	47.5		9.4	59.1	36.1		9.5	55.7	55.1		9.3	51 36.6	32.4	
9.5	54 14.9	57.5		9.5	9 4.7	43.4		9.5	59.1	59.1		9.5	35 7.9	3.4		9.5	43.6	59.3	
9.0	29.5	33.9	K	9.5	25.0	16.3		9.5	24 0.7	40.6		9.5	8.5	15.6		8.8	52 37.0	29.0	
9.4	31.2	36.6		9.0	29.7	8.7	K	9.0	8.4	48.8	B	9.0	15.8	47.1		8.2	55.5	20.9	L
9.0	46.5	16.2		9.3	35.8	49.9		9.5	27.6	56.9		8.9	17.6	55.3		9.5	53 6.9	56.4	
9.2	51.5	8.5		9.1	37.9	40.2		9.1	39.3	25.0		8.6	36.6	29.8	L	9.0	18.7	8.8	
9.4	55 8.3	0.4		9.5	45.3	16.3		9.5	42.4	36.5		9.0	43.8	37.2		8.7	24.8	48.6	K
9.1	19.0	37.7	K	9.0	53.9	32.9	B	9.5	53.8	51.1		9.0	44.0	15.3		8.3	31.3	34.1	K
8.5	38.2	33.8	K	9.5	10 11.7	36.1		9.5	57.1	53.6		9.5	45.1	4.7		9.5	34.0	1.0	
8.3	42.5	14.1	K	9.4	17.6	59.0		9.4	59.0	14.6		7.0	36 19.5	41.0	K	9.5	55.1	54.2	
9.0	46.2	45.7		9.0	30.2	30.5	K	9.4	25 9.8	48.4	B	9.0	20.5	59.6	K	9.5	54 0.4	23.0	
9.3	56 2.0	4.2		9.5	39.1	1.5		9.0	22.9	7.3		8.9	29.4	12.5	K	9.3	1.6	45.6	
7.3	4.8	16.3	K	9.5	54.8	27.0		8.5	23.3	27.4		8.2	37 11.5	55.8	K	9.5	15.8	4.4	
9.3	26.3	25.7		9.5	11 20.9	0.2		9.5	34.5	46.8		9.1	33.7	45.5	K	9.0	16.5	41.1	
8.5	31.8	53.8	K	9.5	35.5	30.6		9.4	37.0	15.1		8.4	38 52.9	8.9		9.2	21.8	22.0	
8.1	38.5	58.0	K	8.3	12 5.7	43.3	K	9.5	53.2	59.6		9.5	56.8	16.0		9.2	45.5	39.8	B
9.5	57 20.0	11.8		9.5	56.8	40.2		9.5	26 26.7	49.6		9.5	39 18.5	45.8		9.3	46.4	37.5	
9.5	23.5	58.3		9.5	13 29.1	0.2		9.4	47.9	3.3		8.0	19.2	26.4	K	7.5	48.7	12.3	K
9.0	48.7	33.0		9.4	44.9	8.5		9.4	27 2.8	21.5		9.0	40 7.9	44.4	K	9.3	55 10.9	35.3	B
9.5	58.9	10.5	B	8.9	58.1	0.0		7.7	22.8	3.7	K	9.4	16.4	1.5		8.1	18.2	42.1	K
9.5	58 0.8	26.1		6.9	14 7.2	34.7	K	8.6	40.7	21.8		9.3	48.3	22.2		9.5	36.1	43.9	
9.4	10.7	52.8		8.8	20.8	6.8		8.4	28 2.0	33.3	K	8.8	48.3	54.7	K	9.5	37.0	6.1	
9.0	21.4	9.0	K	9.5	22.7	33.8		7.9	4.9	20.9	K	9.3	41 4.5	6.2		9.2	56 4.5	9.6	K
9.4	41.7	55.8		8.9	47.3	33.0		9.5	37.2	12.8		6.0	35.5	38.5	K	9.3	5.6	24.5	B
8.5	52.0	46.2	K	8.3	55.0	14.3	K	9.5	44.8	1.6	B	9.5	35.6	48.5		9.1	7.0	53.3	
9.4	59 0.8	50.2		9.5	15 42.5	46.3		9.5	54.3	3.1		9.3	42 19.2	27.8		9.5	16.8	28.0	
9.5	12.3	30.6		8.9	44.3	30.5	K	9.5	29 6.5	12.5		9.5	30.8	34.6		8.9	57 22.1	30.0	K
9.0	29.7	42.6	K	9.0	47.1	51.9	K	9.5	20.0	33.3		9.5	48.6	26.7		9.3	30.6	57.6	
9.4	35.8	20.1		9.4	58.3	51.8	B	9.5	20.2	53.0		9.5	43 25.3	10.0		9.4	51.7	20.7	
9.5	0 34.5	48.2		9.5	16 2.5	31.1		7.2	35.6	0.9	L	9.4	44 24.9	54.0		9.2	58 3.2	0.6	K

5001—5031				5032—5062				5063—5093				5094—5124				5125—5155			
	22ᵘ—23ᵘ	+36°			23ᵘ	+36°			23ᵘ	+36°			23ᵘ	+36°			23ᵘ	+36°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	58 41.8	25.2		8.5	9 23.3	41.7	L	9.5	18 11.3	36.3		9.2	31 40.8	19.1	K	9.4	45 24.6	12.9	
9.5	59 17.9	23.5		8.5	24.8	49.2	L	9.5	52.3	3.3		9.5	48.6	46.3		6.5	39.8	8.1	R
6.5	22.8	2.2	K	9.1	35.6	3.9	K	9.1	19 16.7	38.1	B	9.1	32 40.3	56.1	K	9.4	46 3.2	6.3	
8.9	40.6	10.6	K	9.5	57.4	43.1		8.9	41.1	5.6		9.5	45.5	5.0		9.5	48.6	49.3	
9.5	56.7	51.1		8.0	10 14.6	57.8	K	9.1	20 8.3	6.6	K	6.5	53.1	51.1	K	9.5	47 2.7	12.2	
9.2	0 35.1	4.5		9.5	26.7	8.0		9.4	9.5	45.3	B	9.0	33 11.7	0.2	K	8.5	29.1	48.0	K
9.3	53.9	29.0		9.5	11 0.9	30.0		8.5	28.0	14.6	K	9.5	28.1	2.2		9.3	40.8	57.7	
9.5	2 35.1	26.9		9.4	15.1	3.9		9.5	21 2.1	46.6		9.5	58.6	30.4		9.5	45.4	51.0	
9.5	50.8	16.5		8.6	33.7	54.2	K	9.5	22 44.4	38.6		9.0	34 21.1	48.6		8.9	59.7	1.0	
7.3	57.4	54.4	K	9.5	12 5.6	36.2		9.1	54.6	24.0		9.5	36.2	23.0		8.9	48 27.7	53.6	K
8.0	3 6.3	5.1	K	8.8	6.0	2.1	K	9.4	55.1	7.2		9.5	35 31.6	55.4		9.4	32.8	2.8	
7.0	9.8	3.7	K	9.3	28.4	10.5		9.5	23 55.6	49.6		9.1	34.7	0.5	K	9.5	42.6	46.2	
9.5	13.1	20.6		9.1	38.1	26.9	K	9.5	24 11.6	10.1		8.5	40.6	29.3	B	9.5	49 50.0	18.3	
9.5	36.1	40.6	B	9.5	13 2.4	3.2		8.7	52.5	56.8	K	9.1	36 0.6	34.0		8.6	51 11.9	5.4	K
9.5	4 6.1	32.8		8.8	17.1	26.5		9.4	25 4.5	8.7		8.8	2.1	7.0	K	9.5	13.0	46.8	
9.5	33.2	49.3		8.5	33.0	0.5	K	9.5	39.1	55.7		9.5	17.9	58.1		9.5	53.5	50.0	
8.9	38.1	6.2		8.5	44.5	42.1	K	9.5	26 21.0	12.5		9.3	23.2	42.0		7.5	52 16.8	59.2	K
9.4	41.4	12.5		9.3	14 1.5	4.8	B	9.5	46.7	43.1		9.2	37 32.3	43.8		9.0	21.3	27.9	
9.0	45.3	43.1		9.5	5.2	21.5		9.5	27 7.1	34.2		9.0	38 13.6	1.4		8.6	45.8	3.1	K
8.0	45.8	0.3	K	9.3	14.9	13.9		7.2	31.9	59.3	K	9.5	35.1	59.1		8.4	54 37.6	18.9	K
6.9	5 30.6	11.1	K	9.5	30.8	32.5	B	9.5	28 15.2	12.9		8.3	35.9	48.0	K	9.4	55 25.3	44.1	
9.5	6 15.4	49.2		9.2	15 27.6	17.0		9.5	38.3	13.1		9.3	39.9	28.3	B	8.2	56 32.8	9.5	K
8.8	21.6	13.2	K	9.2	59.0	26.6	K	9.4	52.6	4.6		8.7	42.3	32.3	K	9.1	34.5	53.9	
9.4	29.6	59.3		9.0	16 0.7	18.4		9.5	30 6.1	14.6		7.5	39 29.1	41.7	L	9.0	57 19.8	25.8	B
9.5	46.6	21.1		9.5	4.6	50.7		8.3	16.4	55.4	K	9.5	40 31.9	43.8		9.2	27.3	32.0	
9.4	7 18.7	27.6		9.5	35.3	13.6		8.9	28.0	34.9	K	9.5	41 30.6	49.7		9.5	55.0	21.6	
9.3	8 3.6	57.4		8.8	42.1	51.5	K	9.5	52.2	25.2		9.4	42 6.5	7.4		9.2	55.1	0.6	
9.5	26.4	35.8		9.4	49.1	12.1		9.5	31 12.9	57.5		9.5	16.0	3.4	B	9.0	58 11.3	28.2	
9.5	38.1	30.4		8.5	53.7	36.7	B	9.5	25.5	1.3		9.5	43 0.1	5.3		9.4	57.2	53.1	
9.2	54.7	43.0		8.9	17 1.0	44.9	K	9.5	28.6	32.1		9.5	33.2	23.5		9.5	59 41.6	26.8	
9.1	9 13.5	55.7		9.4	18 2.6	19.1		9.3	40.0	50.4	K	9.5	44 43.2	24.5		9.1	50.5	52.1	K

Zone +37°

1—40				41—80				81—120				121—160				161—200			
	ou		+37°		ou		+37°		ou		+37°		ou		+37°		ou		+37°	
m	° ′	″	′		° ′	″	′	m	° ′	″	′	m	° ′	″	′	m	° ′	″	′	
9.5	0	8.2	39.0		12	24.6	34.5	9.4	23	31.6	7.4	8.9	34	52.8	5.7	K	9.5	45	16.7	49.9	
9.5		23.0	7.3		6.8		27.3	26.5	S	8.5		45.0	3.2	K	9.5	35	26.5	41.3		9.3	46	22.1	45.9	
7.7		23.4	54.2	K	9.0	13	8.2	45.2		8.8		53.9	44.2		9.4		28.4	6.9		8.9		24.7	55.5	
9.5		42.7	7.8		9.1		9.0	32.4		9.2	24	13.1	28.9		9.5		36.1	48.4	B	9.3		36.9	38.9	
9.5		59.2	34.4		5.7		29.8	9.6	K	8.8		25.2	28.9		9.5	36	40.4	18.2		9.0		37.5	48.3	
9.4	1	19.1	48.9		8.8		31.3	35.8	K	9.5	25	45.7	1.0		9.4		57.8	35.8		9.2		52.2	40.2	B
9.0		25.6	12.8		9.5		39.3	57.3		9.2		50.8	9.6		8.8	38	10.7	28.7	B	9.5		56.7	53.4	
9.3		29.2	39.3		7.5		57.0	23.2	L	9.3	26	2.0	21.2		9.2		22.4	30.5		9.1	47	4.9	38.9	
9.5		31.1	42.3		9.1		58.9	46.0	B	9.0		2.3	48.4	K	9.4		24.4	25.8		9.1		13.8	26.9	
9.5		44.0	6.5		9.2	14	0.6	47.1		9.5		34.8	17.8		9.1		28.3	55.3	K	9.4		16.4	43.0	
9.5	2	3.7	39.0		9.5		37.6	28.2		9.5		36.9	7.5		9.3		28.8	19.6	B	9.3		53.5	40.9	K
9.3		7.5	57.2		9.5		43.0	40.8		9.2		56.5	29.2	K	9.5		29.7	52.5		9.5	48	16.8	22.1	
9.0		8.9	26.9		9.3		46.5	35.3		9.4	27	0.7	46.3		9.0	39	23.7	49.8	K	9.5		17.3	23.4	
9.5		50.6	8.1		7.0	15	19.8	57.0	L	8.5		25.5	1.9		9.4		27.0	16.7		8.9		38.7	36.0	K
9.5	3	4.7	41.7		9.5		29.0	38.6		9.2		36.5	47.5	K	9.5		58.5	53.1		4.2		43.8	42.7	K
9.3		5.9	33.6	K	9.3		29.8	20.0	K	9.3		37.6	32.5		9.4	40	9.6	19.0		9.5	49	4.0	40.0	
9.5		12.2	47.5		9.2		53.4	46.6		9.0	28	4.4	33.5	L	9.4		10.8	24.9		9.5		32.1	46.8	
9.2		59.3	43.1	K	var	16	24.0	46.3	K	7.2		18.8	27.1	L	9.3		19.9	51.1		9.4		39.0	20.4	
9.5	4	23.5	4.8		9.2		49.0	32.9		8.9		32.5	2.0		9.5		27.0	11.3		9.5	50	21.4	43.8	
9.4		25.6	38.5		9.5		51.9	37.0		9.5		44.2	1.7		9.5		28.5	46.6		9.5		24.5	59.7	
9.5	4	56.1	48.9		9.4	17	3.9	9.1	B	9.5		48.8	54.8		9.4		40.2	0.7		9.5		25.3	54.3	
9.3	5	30.9	49.8		9.3		9.8	56.1	K	8.9		52.6	26.4		9.5		55.4	18.9		9.5		34.8	35.3	
9.4	6	23.2	5.0		9.5		53.1	36.7		9.4	29	19.9	39.0		7.7	41	36.9	24.9	L	9.5		37.2	9.8	
9.1		37.3	39.0		9.1	18	29.8	26.3		9.5		31.8	51.8		8.4	42	5.2	56.8	K	9.4		54.6	6.2	
9.1	7	2.3	44.5		9.0		30.3	32.0		9.5		52.2	6.7		8.9		10.3	55.3	K	9.5	51	39.9	40.2	
8.4		4.8	46.5	B	9.4	19	11.9	0.5		8.3	30	39.8	13.5	K	9.5		22.5	58.2		9.5		51.0	24.1	
9.5		12.8	47.4		9.4		27.2	53.5		9.1		54.1	47.0	B	9.5		33.6	35.0		9.0	52	14.8	30.8	K
9.4		31.5	47.6		8.0		27.4	58.4	K	9.5	31	22.0	56.7		9.2		35.3	18.7		9.0		15.3	31.1	K
8.1		31.6	15.0	K	8.8		44.1	41.6	L	9.5		25.8	50.8		8.9		39.7	24.2		8.3		28.8	47.6	K
9.2		35.3	56.9		9.5		53.2	20.1		9.4		32.0	2.3		9.2		49.4	40.0		7.0		29.2	0.5	K
9.5	8	6.1	2.5		9.2	20	53.7	55.8		9.1		44.1	28.5		7.0	43	15.8	15.3	K	9.4		41.9	34.6	B
8.1		25.8	57.2	L	9.2	21	4.4	52.6	B	9.3		49.2	25.8		9.5		33.3	41.0		9.3	53	10.2	11.3	
9.0	9	17.2	24.5		8.7		31.9	29.8	K	9.4	32	5.4	43.3		9.3		35.0	18.5	K	9.2		10.4	25.8	
4.5		32.0	53.0	K	9.5		36.6	19.9		8.7		36.8	14.9	K	9.5		42.9	34.3		9.5		19.7	26.4	
9.4	10	5.6	47.6	B	7.4	22	9.8	31.6	K	9.5		39.9	25.2		9.5		43.8	57.8		9.5	54	30.9	17.8	
9.0		11.1	50.9	B	9.3		18.5	2.1		9.5	33	1.1	56.6		9.5		46.6	37.9	B	9.3		35.7	7.1	K
9.4		13.5	50.6		9.5		28.1	38.9		8.8		14.0	28.7	K	9.4		56.5	25.7		9.4	55	13.6	5.8	
9.4		17.4	51.5		9.5		48.4	45.9		9.2		48.8	50.6	K	9.5	44	46.2	6.7		9.5		53.8	40.4	
9.2		35.0	7.1	K	9.5	23	12.0	26.4		9.5	34	10.6	47.4		6.7		55.8	46.0	L	7.3	56	0.1	54.2	K
8.8		49.7	55.9	K	9.5		16.0	28.9		9.1		28.7	8.2	B	9.5		56.3	31.4		9.4		6.1	20.9	

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	5ᵃ		+37°		5ᵃ		+37°		5ᵃ		+37°		5ᵃ		+37°		5ᵃ		+37°
m				m				m				m				m			
9.2	4	51.9	20.8	8.6	12	54.2	14.3 R	8.4	22	33.7	13.0 K	8.3	30	34.1	35.6 K	9.5	42	35.6	3.9
9.4		57.2	58.0	9.2		59.6	56.9	8.0		37.6	55.5 K	7.8		54.1	15.1	9.5		36.9	19.2
9.2		59.1	54.3	9.2		59.9	0.3	9.5		40.0	7.2	9.5	31	8.9	44.0	9.5		49.0	27.6
9.5	5	31.4	32.0	9.5	13	15.4	13.0	9.0		52.9	55.0 K	9.1		33.1	59.9	9.4	43	15.4	28.8
9.5		32.0	14.3	9.3		22.1	34.1	8.7	23	13.1	18.7	9.5		55.6	22.0	9.4		24.4	22.9
9.5		48.5	3.2	9.4		32.3	50.4	9.0		38.6	25.7	9.1	32	1.9	7.4 K	9.5		29.6	17.3
9.5		48.9	50.9	9.5		45.2	30.8	9.5		47.2	43.7	8.3		3.1	2.3 K	6.8		36.2	17.7 K
9.5		51.3	20.0	9.4		51.5	27.0	9.5		50.9	22.0	9.2		11.9	39.4	9.5		39.1	39.0
9.0		59.9	12.8	8.1		52.6	3.1 K	9.5	24	2.5	14.3	9.4		16.7	48.4	9.0		47.4	58.5 K
9.2	6	2.3	27.6	9.2		54.4	48.0	9.3		4.9	47.9	9.4		21.8	5.9	9.0		52.7	27.6 K
9.0		8.9	0.5 K	9.3	14	7.3	33.5	9.5		30.2	2.5	9.1		38.5	11.8	9.5	44	22.8	35.0
9.2		9.4	44.9	9.4		17.8	17.9	9.3		34.1	37.3	8.7		53.4	54.9	8.9		33.5	22.9
9.5		39.7	1.9	9.3		25.9	25.2	9.5		42.7	8.5	9.5		57.0	28.9	9.5		45.8	47.2
9.3		44.8	55.5	8.5		41.9	31.2 K	9.4		45.9	31.3	9.3	33	3.9	45.9	9.4	45	2.0	3.9
8.7		53.9	28.1	5.3		48.0	14.7 K	9.1		48.0	26.4	9.5		6.3	17.7	9.0		35.9	4.6 K
9.5	7	14.9	21.6	9.4		53.3	23.6	9.2		48.4	40.0	9.3		20.4	15.7	9.5		40.8	45.4
8.8		17.0	37.0	8.0	15	6.1	22.1 K	9.2	25	2.4	49.8	9.4		43.1	18.4	9.5		42.7	11.5
9.5		17.3	45.4	8.4		7.2	7.5 K	8.8		11.8	8.9 K	9.5		55.0	42.6	9.5		42.7	12.9
9.2		18.5	49.4	9.5		16.9	58.9	9.4		12.7	44.6	9.5	34	15.5	18.9	9.0		47.5	8.4
9.4		33.6	11.5	9.5		21.4	23.4	9.1		14.9	29.9	9.5		18.9	55.7	8.9	46	9.8	21.7
9.5		43.5	43.2	9.5		31.5	56.2	9.4		16.0	38.3	9.5		27.9	58.3	9.5		17.2	16.8
9.0		45.1	55.8	7.8		43.4	54.8 K	7.3		32.9	47.9 K	9.5		33.5	13.2	9.0		26.5	37.5
8.9		50.7	33.0	9.4		44.6	23.7	9.5		35.6	1.8	9.5		41.5	18.5	9.5	47	6.3	31.0
9.5	8	1.3	22.8	8.8		58.1	49.6 K	7.8		37.9	55.3 K	9.2		42.7	7.2	9.0		14.3	23.9 K
9.4		14.2	4.8	9.5	16	8.5	15.3	9.5		54.0	22.0	9.5		54.9	40.0	7.2		56.0	29.6 K
9.5		17.6	39.8	9.0		14.3	13.4	9.5	26	8.4	16.3	8.3		57.1	30.6 L	9.0		58.8	2.4
8.0		18.4	29.5 L	9.4		25.1	56.3	8.7		45.1	38.0	9.2	35	36.2	33.8	9.0		58.8	59.9
9.3		33.3	5.7	9.4		26.5	10.4	9.2		49.5	17.5	7.1		53.1	35.5 L	9.3	48	15.6	13.4
8.8		34.9	26.6	9.2		29.9	53.6	8.2		53.9	3.0 K	9.5		58.5	44.4	9.1		19.5	30.8
9.0		43.6	35.4	9.4		30.2	56.3	8.7		54.9	43.3	8.8		58.9	21.7	9.4		19.9	11.6
9.1		52.1	17.2	9.2		31.1	3.7	9.3	27	0.8	3.4	9.5	36	2.3	37.3	9.4		25.9	52.6
9.5		52.2	29.0	9.2	17	6.9	48.0	9.0		20.1	57.6	7.1		3.5	14.3 B	9.5		56.4	53.6
9.5	9	3.6	21.0	9.5		20.9	19.9	9.2		20.5	17.0	9.5		14.2	25.9	9.1		56.8	59.7
9.0		6.4	1.9	9.5		21.7	54.7	9.2		41.3	40.5	9.4		24.7	32.1	8.4		57.5	33.6
9.3		11.3	36.2	9.4		37.1	57.8	9.0		48.5	49.3	9.2		25.5	51.1	8.4	49	1.9	2.7 K
8.9		15.5	9.6 K	8.6		49.9	35.5	9.5		49.4	21.2	9.4		46.2	49.4	9.4		3.3	36.5
9.5		18.5	42.0	9.5		58.6	59.9	9.4		49.9	5.9	9.1		46.4	15.8	9.0		36.0	23.4
9.5		19.3	34.3	9.5	18	7.3	11.6	9.3		49.9	1.3	9.4	37	2.9	2.8	9.5		46.6	50.3
9.2		23.9	8.1 K	8.5		12.1	58.1	9.3		50.2	15.7	9.5		6.0	31.3	9.3		47.9	13.6
9.3		30.9	27.8	8.5		23.5	6.2 K	9.3	28	0.6	59.1	9.4		14.1	0.0	3.0		50.8	12.1 K
8.4		35.8	59.1 L	9.4		33.6	11.4	9.3		14.9	16.2	9.5		23.1	54.6	9.5	50	17.0	11.6
9.5		47.3	40.2	8.3	19	7.0	38.9 K	7.7		21.3	38.9 K	9.5		32.4	56.5	9.1		34.8	37.3
8.5	10	10.2	45.0 L	8.8		16.3	58.8	9.1		25.5	36.8	9.1		36.7	5.9	9.5		38.5	29.1
8.4		14.1	15.3	9.3		18.1	51.1	9.5		28.8	22.8	9.5		49.2	15.0	9.3		39.7	3.4
9.5		51.4	42.1	8.3		50.2	48.6 K	9.0		35.2	42.8 K	9.1	38	13.6	17.7	8.3		56.5	43.2 K
7.2		52.3	17.3 K	9.4		51.4	10.1	9.3		41.6	42.0	8.3		14.4	57.4 B	9.2	51	26.9	35.8
9.5		54.8	28.6	9.1		56.9	23.7	9.4		46.0	46.7	9.5		14.9	28.1	9.5		52.5	40.0
9.5		59.9	22.9	8.3	20	15.0	31.4 L	9.4		46.4	59.0	9.5		25.4	41.7	9.2		58.0	38.3
9.5	11	0.0	8.3	9.5		15.4	8.4	9.2		56.1	9.9	9.5		40.0	49.8	8.6	52	15.3	43.5
8.8		11.3	19.9 K	8.6		19.3	12.8 K	8.2	29	3.5	39.0 K	9.5		57.3	5.8	9.2		24.0	18.0
8.5		16.6	58.7 K	9.5		30.4	23.4	7.6		8.4	53.3 L	9.0	39	23.4	0.7	8.9		52.8	30.6
9.5		27.6	57.2	9.4		47.9	42.0	9.1		8.5	47.4	9.5		40.4	46.7	9.5		58.6	38.6
9.5		31.1	42.5	9.5		50.8	17.6	9.5		19.4	3.8	7.8	40	29.1	25.7 K	9.5	53	14.7	37.0
9.4		43.6	43.0	8.5		54.8	41.8 L	9.5		32.9	29.9	8.9		50.7	24.2	9.5		29.9	28.7
9.5		51.4	50.1	9.4	21	43.9	56.8	7.0		40.8	54.4 L	9.5	41	1.9	35.8	9.4		50.0	29.8
9.5		51.4	56.1	9.4		43.9	55.3	8.9		46.7	5.2	5.0		9.9	15.5 K	9.5		51.2	59.7
9.5		55.8	47.5	9.5		56.5	39.0	7.2		58.3	52.6 L	9.1		11.0	46.6	9.5	54	8.8	18.7
9.5	12	27.9	47.9	8.9	22	8.4	16.3	8.8	30	26.0	39.8 K	8.7		13.9	7.6 K	9.3		9.4	3.5
9.5		30.1	13.8	8.0		15.2	58.0 L	9.4		26.4	7.7	9.4		50.4	1.3	9.0		12.2	11.2
7.2		42.0	31.8 L	9.5		24.9	24.5	9.1		31.3	51.2	8.0	42	3.2	47.9	9.3		15.7	17.4

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	5ᵘ—6ᵘ	+37°			6ᵘ	+37°			6ᵘ	+37°			6ᵘ	+37°			6ᵘ—7ᵘ	+37°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.1	54 15.9	20.0		9.0	6 56.5	58.0		9.2	20 31.0	8.4	B	8.6	36 28.9	24.4	R	9.2	53 47.5	51.3	
9.5	21.3	59.7		9.4	7 1.4	5.7	B	9.5	21 17.9	0.6		8.9	37 10.9	4.3	B	8.5	47.7	31.6	
9.5	57.0	39.3		9.2	10.9	49.7		9.5	24.9	0.8	B	9.3	39.4	11.8		8.7	52.8	0.2	K
9.5	55 0.5	27.4		9.5	33.6	5.9		6.5	40.4	16.2	K	9.3	45.2	10.8	B	9.5	54 22.2	37.7	
6.7	5.7	58.0	L	9.5	36.8	10.7		8.3	41.4	31.9	K	9.4	56.6	11.4		7.0	27.8	47.6	K
9.4	23.1	21.1		9.5	8 21.9	59.2		9.4	55.9	31.1		9.3	38 35.9	55.3		8.7	28.7	0.9	K
8.9	34.0	14.6		9.5	27.3	43.7		9.5	22 16.5	21.6	B	7.1	39 2.9	40.0	B	9.5	44.1	22.8	
8.8	34.8	24.6		9.4	33.7	47.8	B	9.5	33.0	38.9		7.5	5.0	7.8	K	8.5	55 1.3	11.2	
8.8	35.3	19.6	B	9.5	35.4	41.9	B	9.5	36.2	44.3		9.5	22.4	17.2		8.6	1.8	58.3	
9.5	50.2	53.0		9.5	55.4	18.2		8.6	23 11.4	12.7	L	8.5	36.3	13.5	B	9.3	41.6	24.7	
9.3	51.0	39.2		9.1	9 2.6	8.6		8.5	12.0	40.4	K	8.5	39.5	56.0		9.0	56 17.0	53.0	
9.5	56.8	35.5		9.5	7.5	49.5		9.1	27.2	45.1	K	6.5	53.0	40.9	R	9.2	20.2	32.7	
9.5	56 4.0	10.5		9.5	13.1	8.5		9.3	37.9	50.8		9.1	40 9.4	11.1	B	9.3	39.6	48.9	B
9.1	12.5	4.2	K	9.2	23.8	30.6		9.1	24 0.8	21.0		9.5	14.6	26.8		9.3	54.3	24.1	B
9.2	27.8	32.4		9.0	29.9	32.6		9.5	18.4	40.4		9.0	26.9	1.5	K	9.2	56.4	13.3	K
9.5	57 13.0	56.5		9.2	33.4	21.1		8.9	47.3	55.1		9.4	27.1	14.6		9.5	57 0.4	21.7	
8.5	17.1	10.7	K	9.0	10 3.5	15.3		9.3	54.4	32.1		9.0	46.0	43.3		9.3	11.5	26.2	B
9.1	20.0	36.7	K	8.4	10.3	14.1	L	9.0	25 11.5	38.2		8.4	58.5	43.7		9.5	58 17.8	17.2	
9.3	58.6	11.6		9.5	13.2	16.8		7.2	16.1	10.9	K	9.5	41 17.7	10.5		9.5	20.6	9.8	
9.0	58 13.1	15.5	K	9.2	13.7	10.8		6.8	27.4	49.9	S	9.2	18.1	1.4	K	6.5	48.8	39.7	K
7.2	14.7	59.7	K	9.5	15.2	25.5		8.6	42.7	57.8		9.5	41.6	20.9		8.4	59 3.0	45.6	K
8.2	24.8	44.9	K	9.3	17.9	31.0		9.2	26 19.2	53.7		9.5	42 27.2	14.3		9.5	36.7	13.9	
9.2	35.5	58.2	K	9.1	37.9	45.2		9.3	38.0	38.2		9.4	34.4	27.6		9.1	50.1	27.0	
8.5	59 8.6	38.5	K	9.5	11 7.5	51.6		8.3	38.6	25.4	B	9.1	30.0	34.6	K	9.5	0 7.4	27.8	
9.3	16.2	59.2		8.9	8.8	25.2		8.7	51.3	58.0		9.4	45.2	47.6		9.3	20.3	30.3	B
8.9	23.8	48.3		7.8	14.5	59.9	L	8.0	27 1.0	23.3	B	8.6	43 14.0	58.3	B	9.5	37.3	55.1	
8.3	46.1	13.3		9.5	49.4	3.5		8.0	1.2	1.6	K	9.0	44 7.2	44.0		9.5	39.1	18.2	
8.0	58.8	35.4	K	9.1	51.4	30.5		9.3	28.2	47.1		9.5	52.0	14.2		9.0	45.1	37.7	
8.7	0 0.0	6.8	K	9.0	59.5	20.9		9.5	53.9	57.6	B	7.6	52.9	7.4	K	9.5	55.3	36.2	
9.2	6.1	46.6		9.5	12 13.0	9.8		9.2	28 1.0	22.9	K	9.3	45 4.1	38.0		8.5	1 13.6	32.4	L
9.5	42.9	2.4		9.5	19.7	7.2		9.5	28.8	59.9		9.3	15.3	55.2		9.4	15.9	0.1	
9.5	46.2	55.6		9.5	22.3	23.5		9.5	39.8	52.7		9.5	58.6	7.0		9.2	23.5	3.8	K
9.5	48.3	13.1		9.5	32.5	2.2		8.0	41.5	13.8	K	8.7	46 2.6	27.1		9.3	44.6	53.5	K
8.5	58.4	43.4	K	9.5	13 30.3	41.0		9.1	29 9.8	21.7	K	9.5	13.2	38.8		9.5	2 0.0	16.8	
9.2	1 39.2	6.7		9.1	30.4	31.9	K	9.3	41.5	9.6		8.7	13.5	33.8	L	9.5	17.7	1.8	
9.3	42.0	15.6		9.4	40.2	38.6		9.5	42.0	52.7		8.1	26.9	8.0	K	9.4	34.2	37.2	
9.2	42.5	46.3		9.1	14 2.8	24.8		8.0	30 19.8	52.7	K	9.5	53.2	19.6		9.5	3 8.0	1.1	
9.4	48.5	57.7		8.8	10.1	36.5		8.0	40.4	24.4	L	9.5	57.0	10.2		9.2	18.8	52.1	K
9.5	2 14.7	26.7		8.6	11.3	42.4	K	9.4	48.9	11.3		9.5	47 15.5	49.8		9.5	32.8	14.3	
9.4	20.6	30.1		9.5	30.2	53.2		9.0	31 21.4	13.9		6.9	29.0	34.9	K	9.5	45.7	54.5	
9.5	55.9	39.0		6.8	36.5	24.2	L	9.5	25.3	58.0		9.3	48.0	31.6	K	9.3	4 21.9	16.2	
9.5	3 18.4	43.0		9.3	42.4	29.5		9.3	26.9	17.6		9.5	51.2	45.7		9.3	39.6	34.7	
7.0	38.5	11.4	K	9.0	59.9	16.1	K	8.6	32 3.9	45.4		9.4	48 12.8	42.7		9.5	5 9.1	45.1	
9.3	58.6	31.0	B	9.5	15 32.0	32.6		9.1	10.5	6.6	K	9.5	28.9	49.6		9.1	10.6	32.0	B
9.3	59.4	27.0		9.4	46.5	55.5		7.8	32.6	14.4	K	8.4	33.4	4.0	K	9.5	18.2	17.9	
8.2	4 2.5	0.5	K	9.0	50.6	47.1	K	8.5	33.2	50.8		9.4	53.2	14.2		9.4	18.4	56.5	
9.3	8.8	13.0		9.4	16 20.2	6.2		6.5	33 23.4	16.8	K	9.1	49 37.1	20.8		9.4	36.6	11.6	
7.9	9.7	21.2	K	9.0	32.7	34.0		8.0	39.5	9.1	K	7.5	39.0	16.7	S	8.7	37.4	56.5	K
8.8	21.2	5.5	K	8.2	17 3.5	23.1	K	9.3	34 11.4	44.7	K	7.7	40.6	17.0		9.5	56.1	17.4	B
9.5	32.4	35.8		9.2	35.4	3.7	B	9.0	20.9	21.6	K	9.3	50 14.2	7.8		9.5	59.8	38.8	
9.5	37.3	42.9	B	9.0	43.6	3.8	B	7.8	23.1	8.2	K	9.5	32.6	51.0		8.1	6 7.2	1.6	K
9.4	40.0	52.6		9.4	18 1.1	40.5		9.2	27.8	5.7		8.6	59.0	19.8	K	9.2	45.1	39.0	
9.1	5 3.4	11.7	K	9.5	5.0	19.9		9.5	37.9	12.5		9.4	51 8.3	58.3		9.5	54.2	59.1	
9.0	20.8	52.4		8.8	31.1	15.9	B	9.0	42.4	39.0	K	9.3	19.4	25.6	K	8.9	7 2.3	28.4	
8.3	26.9	25.8		9.2	29.5	22.8		9.5	35 4.3	58.5		9.0	46.7	37.7	K	9.0	9.1	14.0	
9.5	48.4	40.0	B	8.3	49.6	27.8	S	9.1	23.5	22.9		9.0	53.0	50.2	K	9.0	28.8	58.3	
9.0	6 0.7	14.8	K	9.5	19 4.8	39.2		8.5	50.9	37.3		9.5	52 19.9	9.3		9.5	41.8	48.7	
8.7	4.0	47.3	L	9.2	21.1	52.8	K	8.2	53.3	55.1	L	9.2	21.5	54.9	K	9.4	8 29.5	3.0	
7.5	11.3	41.9	L	9.3	55.4	29.9		8.5	36 17.3	25.8	R	8.5	49.5	34.2	R	9.1	30.3	16.1	
8.7	15.9	8.4	K	8.5	20 13.9	54.4	K	8.3	21.4	46.3	L	8.9	53 36.9	50.2	L	9.5	9 11.2	6.4	

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	7ᵘ	+37°			7ᵘ	+37°			7ᵘ—8ᵘ	+37°			8ᵘ	+37°			8ᵘ—9ᵘ	+37°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	9 21.1	32.4		9.3	33 16.3	2.6		9.2	55 28.1	6.9	K	9.5	26 35.1	0.7		9.0	52 57.3	40.8	K
8.8	50.4	43.7		9.4	58.6	3.0		8.8	56 22.7	17.4	K	9.5	27 4.1	26.4	B	9.0	54 37.4	23.7	R
9.5	10 1.8	46.2		9.5	34 26.5	55.2		9.5	57 37.8	46.1		9.5	25.3	51.8		8.0	58 36.3	40.1	L
9.4	30.2	25.8		9.5	32.8	6.3		9.0	58 15.4	52.0	K	9.3	53.7	3.3		9.5	59 20.1	10.8	
9.5	11 34.8	41.0		9.5	50.9	35.7		8.7	59 16.7	37.2		7.5	28 58.0	31.8	K	9.4	20.6	7.8	B
7.1	43.4	56.0	K	9.2	55.7	2.4	K	9.1	32.7	53.0		9.5	59.2	41.0		9.2	23.3	20.7	K
5.3	12 22.1	2.0	K	9.2	35 0.1	14.9		8.8	37.5	38.2		9.5	29 18.0	44.5		9.5	0 12.5	2.6	
9.4	38.6	16.2		9.3	36 3.7	3.1		8.5	49.3	59.6	L	9.5	44.8	33.6	B	8.6	2 22.0	20.8	
9.5	47.7	12.5		5.3	58.4	51.9	K	9.2	0 17.9	24.6		9.1	30 55.7	11.8		9.3	3 0.6	42.1	
9.5	13 23.6	9.5		9.4	37 9.5	21.8		9.1	57.4	58.0		9.4	31 19.6	4.3		8.9	16.8	0.6	K
9.4	44.9	48.6		9.5	25.5	31.4		8.1	58.5	45.4	K	8.5	32 15.8	44.0	B	9.3	26.9	12.2	
9.5	14 0.0	41.6	B	8.7	38 9.8	45.6		8.9	1 16.0	3.7	K	9.5	56.3	23.5		9.4	30.8	26.4	B
9.4	15 18.1	29.5		9.2	9.9	19.5		9.4	42.8	53.3		8.1	33 0.2	1.2	K	9.0	31.8	58.6	
9.2	47.2	18.0	K	9.5	22.3	51.9		8.9	57.7	12.8	K	9.5	8.1	59.2		9.5	4 5.4	9.3	
9.3	16 2.2	15.8	B	8.8	55.6	3.5	K	9.5	3 4.8	29.7		9.2	10.4	27.5	B	8.5	32.3	37.1	K
9.5	35.2	28.7		9.4	39 11.1	2.4		9.3	19.6	22.5		9.1	27.4	15.8		8.0	6 3.6	40.2	K
9.1	37.4	17.9	K	9.5	32.7	26.6		9.2	35.2	30.9		9.4	34 12.5	10.0		8.2	12.3	17.1	K
8.3	17 35.5	53.6	K	8.3	43.4	28.4	K	9.5	36.1	23.5	B	7.2	17.9	13.7	K	9.4	7 12.7	52.1	
9.1	18 1.4	5.7	K	8.2	53.3	59.5	K	8.7	57.0	37.9	K	7.0	54.0	26.1	K	8.1	47.0	39.1	K
8.9	13.5	1.7	K	9.4	40 21.4	14.5		9.4	6 4.5	57.0	B	8.0	35 29.8	36.1	K	9.2	8 16.3	9.2	
8.9	28.9	27.9	B	7.7	41 28.5	35.0	K	8.9	29.0	52.8	L	9.4	35.6	53.4		9.5	42.7	29.6	
9.0	44.6	41.1		8.7	30.9	9.3		9.5	7 0.5	14.5		8.1	40.2	4.1	K	9.4	9 2.3	57.0	
9.4	59.5	34.0		9.5	37.4	52.5		9.2	4.1	43.8	K	7.0	36 19.7	48.5	K	9.5	23.5	47.1	
9.2	19 42.7	13.2	K	6.8	37.9	27.0	K	9.5	11.5	2.2	B	8.7	53.2	53.3	K	9.0	40.0	49.6	
8.0	20 3.1	26.4	K	9.5	42 0.7	16.3		9.5	37.0	25.5		9.5	55.7	26.1		4.2	49.4	25.7	K
9.5	26.7	1.1		9.3	10.6	6.8		9.0	8 5.6	44.4	K	9.4	56.7	23.3	B	9.1	10 8.3	5.8	
9.5	33.1	52.9		9.3	43 0.3	36.2		9.4	17.9	2.4		9.4	37 28.9	11.0		8.8	32.5	35.7	
9.5	40.3	17.9	B	9.3	21.9	0.9		7.8	42.0	36.9	K	9.3	33.7	51.3	B	8.8	45.3	44.8	
8.5	41.9	4.4	K	9.4	28.3	4.7	B	7.3	54.8	30.4	K	9.5	38 16.5	6.7		9.4	11 49.6	35.2	
9.5	21 3.2	45.6		9.2	44.8	54.0	K	9.5	10 0.3	51.8		9.1	39 7.2	27.0	K	8.6	56.5	19.4	S
8.5	7.0	41.4	K	9.2	54.0	48.1		9.5	24.6	52.4		9.5	12.5	43.9		8.8	12 20.3	50.9	K
9.4	15.5	38.7		8.9	44 5.4	2.4	K	9.5	11 34.0	43.4		9.5	40 11.3	2.8		9.2	23.4	10.3	
9.5	25.5	1.3		9.5	6.6	24.2		9.4	12 48.1	1.0		9.1	15.0	21.0	K	9.5	46.1	1.3	
9.4	32.4	56.3	K	9.5	17.9	23.3		9.5	13 25.4	0.5		9.3	42.8	21.5		9.4	13 55.2	12.9	
9.5	22 0.6	34.1		7.3	36.4	6.9	K	9.5	14 4.4	10.8		9.3	41 11.9	34.9		9.5	14 14.0	6.4	
9.3	1.0	3.1		9.4	43.5	39.3	B	7.3	15 58.0	51.9	K	7.8	23.9	25.6	K	9.5	15 3.0	18.9	
8.8	50.4	38.0		9.3	48.7	9.0		7.5	16 36.2	26.5	L	9.5	49.7	24.6		9.2	24.3	20.0	
7.8	23 20.4	19.3	K	9.4	50.8	37.1		8.4	52.7	9.1	B	9.4	43 54.0	44.4		7.0	24.5	13.2	L
9.5	30.5	52.0		7.8	45 34.2	34.2	K	8.0	17 24.9	6.5	K	6.9	58.9	35.9	K	9.3	44.0	19.5	
6.5	42.2	30.1	K	8.0	54.6	20.7	K	9.3	18 0.0	44.0	K	9.0	44 28.5	57.9		9.5	16 17.3	57.7	B
8.5	42.9	38.3	K	9.1	46 7.4	39.6		9.2	20.8	58.3	K	9.2	42.6	42.2	K	8.5	19.1	52.1	K
9.2	24 19.5	9.8		9.1	40.5	3.4		9.5	36.0	20.0		9.5	59.1	37.0		8.4	27.5	6.5	K
9.4	26 26.4	10.0		8.9	58.7	46.4		9.4	45.8	26.9		9.0	45 32.4	20.3		9.5	17 36.1	30.7	
9.5	52.3	22.4		8.3	47 10.5	16.7	K	7.5	57.1	29.2	B	9.0	46 0.0	39.7	K	7.3	43.5	5.8	K
9.1	27 46.1	11.4		8.7	24.3	50.8		9.1	19 45.3	4.5	K	9.5	17.3	43.0		9.5	18 8.4	8.6	
9.3	28 4.3	57.3		9.5	35.1	0.0		9.3	20 2.8	38.9	K	9.4	44.0	22.8		9.2	13.1	53.1	
8.1	15.8	6.3	K	9.2	48 27.6	34.5	R	9.0	17.0	42.9	K	7.7	57.3	0.2	K	9.0	20.1	6.1	B
9.5	43.9	3.0		9.4	35.7	46.1		8.0	32.7	33.4	K	9.5	47 41.8	28.6	R	9.4	21.6	6.8	
9.1	29 37.8	48.9		9.2	38.9	17.2		9.5	21 30.0	20.0		7.9	48.3	48.6	K	8.9	19 59.9	17.7	K
9.1	48.9	18.2	K	9.4	50.5	26.8	B	6.5	56.7	45.3	K	9.1	48 15.9	45.6	K	9.5	20 40.8	48.4	B
9.5	30 6.5	27.7		9.5	49 2.6	22.8		9.3	22 30.5	11.4		9.2	47.4	59.5		9.4	21 21.1	32.6	
9.5	38.7	43.1		9.0	24.8	58.0		9.3	54.2	16.0		9.5	49 17.6	40.2		6.8	22 47.6	4.5	K
9.3	31 20.0	42.3	K	8.0	58.7	29.2	K	9.0	23 3.5	58.3	S	9.1	23.3	14.7	K	8.8	59.8	48.0	K
9.4	30.0	6.9		9.5	51 23.6	16.0		9.2	5.6	21.8	B	9.1	50 45.2	25.7		9.5	23 9.0	44.6	
9.2	48.1	46.9	B	9.5	52 3.7	45.4		9.5	28.7	4.5		9.0	51 9.1	19.7	K	8.2	28.6	54.0	K
7.6	32 0.8	45.7	B	9.5	34.2	0.5		9.0	49.1	34.5		9.5	37.5	20.3		9.2	24 16.5	1.9	
9.4	20.4	15.4		9.4	53 3.9	19.3		8.6	24 18.1	35.4		9.5	52 2.7	1.9		8.0	20.4	17.8	K
9.4	32.0	9.3		8.8	43.4	46.4		9.5	50.5	48.4		8.3	11.3	28.3	K	6.8	36.0	7.8	K
7.7	47.0	25.7	K	6.5	52.7	32.6	K	9.5	25 17.0	10.8		9.5	14.5	19.8		9.0	49.6	59.5	
9.0	49.4	7.8	K	9.3	55 16.5	41.9		9.2	20.5	41.0		9.5	46.4	57.3	B	9.1	51.8	12.1	

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	12ᵘ	+37°			13ᵘ	+37°			13ᵘ	+37°			13ᵘ—14ᵘ	+37°			14ᵘ	+37°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	29 54.8	23.5		8.6	0 12.3	3.2		6.5	25 53.3	33.1	K	8.8	53 34.7	12.3	K	9.5	24 39.4	7.3	
9.5	30 4.5	8.6		9.5	24.0	44.1		9.4	26 58.0	31.0		8.8	52.6	4.7	K	8.8	47.8	0.2	B
8.3	48.9	50.3	K	9.4	41.1	43.8	B	9.3	59.7	53.0		8.6	54 10.5	39.7	K	9.5	25 22.9	42.2	
9.5	31 47.4	23.5		9.5	52.6	43.0		9.5	27 5.0	25.0		9.3	28.7	9.6	B	9.4	32.2	15.3	
8.8	32 28.4	6.2	K	8.7	57.0	52.3	K	9.0	28 11.6	55.6	B	9.5	37.0	58.5		6.8	27 25.7	35.8	K
8.0	52.8	47.4	K	9.1	1 2.5	2.0		5.1	18.8	55.6	B	9.3	55 33.4	25.2		9.4	47.7	21.3	
9.4	33 25.6	23.3	B	8.3	9.7	44.8	K	9.3	35.0	15.0		9.5	55.0	2.8		9.5	54.5	30.8	
9.5	54.8	40.5		9.3	23.0	48.5		8.0	49.7	7.3	L	9.3	56 33.8	43.7	B	9.3	28 15.1	38.7	B
9.4	34 13.4	15.7		7.5	58.6	59.9	K	9.1	29 25.8	47.6		9.0	57.0	33.7		8.3	19.0	45.7	K
9.0	18.4	50.0		9.5	2 35.9	43.7		9.5	30.8	12.3		8.0	58 2.0	52.1	K	8.9	33.0	41.7	K
9.5	46.6	52.5		7.5	3 20.5	54.6	K	9.5	30 13.7	42.0	B	9.3	48.6	25.7	K	6.2	44.0	15.8	L
8.9	35 53.3	37.0		9.5	4 15.5	50.9		9.5	48.2	4.9	B	9.1	59 0.1	6.9		9.3	48.4	31.5	
9.5	36 11.8	34.0		9.3	18.6	25.0		5.3	31 1.9	2.2	K	9.5	38.4	3.8		9.0	31 13.3	27.9	K
9.5	58.8	27.6		9.3	18.9	22.0		9.0	27.7	42.7	K	9.3	49.3	15.8		9.4	59.1	9.7	
9.5	37 13.5	46.1	B	9.2	5 11.0	26.5		9.5	33 6.5	8.5	B	8.2	0 30.9	56.1	K	9.1	32 19.0	2.0	K
8.3	17.3	16.6	K	7.8	20.4	41.0	K	9.4	6.9	59.6	B	9.4	1 40.4	1.7		9.4	19.8	10.2	
9.2	30.5	4.3	S	9.5	31.2	45.0		9.5	22.7	8.8		9.0	47.9	41.0	K	8.0	24.1	22.4	K
9.4	42.6	33.4	B	9.5	6 6.4	10.3		8.6	51.9	44.1	K	8.0	2 3.2	25.7	K	9.5	56.7	41.4	
9.2	50.0	3.9	S	9.3	9.6	19.7		9.4	34 54.0	34.2		9.3	6.6	49.2		8.1	33 32.2	8.0	K
8.9	39 12.6	25.0		8.5	17.9	56.0	K	9.4	35 0.2	11.0		9.0	16.7	43.2	B	9.5	34 9.3	57.8	
9.5	13.4	38.0		9.3	35.7	44.5		9.3	43.7	19.8		9.3	3 30.0	19.8		9.5	18.4	12.5	
9.4	23.4	42.0	B	9.5	47.3	22.0		8.9	43.9	59.0	K	8.8	4 26.6	12.1		9.5	56.9	47.8	
8.8	29.3	34.0		6.5	54.4	39.0	L	9.5	47.0	28.2		9.0	59.7	8.6		9.5	35 11.9	51.8	
8.5	40.9	37.9	K	9.5	8 22.5	3.7		9.5	50.2	9.6		9.5	5 15.0	13.9		9.5	36 10.8	29.5	B
8.3	41 17.1	6.9	K	8.8	25.7	24.1	K	9.3	36 25.5	49.1		8.6	6 52.5	14.7	K	8.6	11.8	13.2	B
7.8	32.9	7.9	K	9.5	37.1	15.7		9.0	37 37.3	1.8	K	9.2	7 25.9	33.2		8.3	27.9	14.1	K
9.3	50.9	55.8	B	8.3	49.2	22.6	K	9.4	53.5	36.7		8.5	44.0	15.3	K	8.8	41.6	9.2	K
8.5	53.2	37.5	K	8.3	10 2.0	9.2	K	8.7	57.0	3.3	K	9.1	56.0	55.0		6.8	48.4	22.0	K
9.3	42 5.6	58.7	B	9.5	25.9	38.9		9.1	38 7.9	18.8		9.4	9 9.4	25.7		9.5	37 44.3	58.3	
9.5	10.9	42.9		8.8	38.4	31.2		9.0	41.5	21.3		9.3	17.0	2.0	B	9.4	59.7	39.5	B
8.6	43 17.4	39.6	B	8.1	48.4	34.9	B	9.5	53.7	26.7		8.0	42.5	42.7	K	9.5	39 27.9	24.9	
8.9	44 57.9	14.2	K	9.5	50.7	27.8		9.5	39 23.2	1.1		9.4	10 15.4	22.9		8.9	40 9.5	3.6	K
9.2	45 0.9	18.6		9.4	11 21.7	23.7	B	9.2	32.0	13.7	K	7.8	21.9	49.1	K	8.0	12.0	30.3	B
8.0	47 11.9	46.5	K	9.2	12 44.9	21.0		9.3	40 13.5	30.7		8.8	23.0	59.0	K	8.0	25.4	2.5	K
9.0	40.9	26.5		9.5	53.8	54.5		9.2	41 33.9	47.1		8.8	24.3	20.4	B	9.2	42 27.6	52.3	K
9.5	49 38.3	26.0		7.0	13 8.7	8.0	K	8.9	42.2	4.7	K	9.5	11 7.9	52.5		8.9	43 18.7	29.9	
9.2	43.6	38.5		9.4	10.9	49.8	B	6.5	43 25.9	20.3	K	9.0	57.9	12.4	K	9.4	48.0	24.9	
9.5	50 15.2	51.9		9.4	58.0	35.1		9.5	45 30.1	33.2		9.5	13 11.5	26.2		8.4	44 4.5	12.0	
9.5	44.9	36.5		7.0	59.9	26.1	K	9.2	46 46.0	37.7	K	7.0	14 48.5	3.5	K	9.5	19.0	43.2	B
9.3	52.3	32.0		8.8	15 6.6	14.2		9.1	55.3	38.2	K	8.9	51.4	19.1	K	5.7	46.6	51.8	K
8.1	51 1.1	29.5	K	9.3	21.1	22.6		9.3	47 7.2	1.2		9.4	15 41.7	20.8		9.5	57.4	38.4	
9.3	12.0	19.6	B	8.5	16 13.4	56.9	K	9.5	36.0	54.5		8.7	42.6	3.4	K	9.0	45 7.5	59.2	K
9.5	27.6	44.0		9.4	49.8	11.1		8.9	58.4	44.1		9.1	56.0	20.8		9.4	48 27.3	11.2	B
9.3	49.6	9.7		6.0	17 19.6	47.3	K	8.8	48 4.4	21.8	K	9.3	16 4.2	2.6		9.5	49 21.9	29.9	
9.4	53.1	34.3		9.4	19 13.0	7.9		9.4	9.5	21.2	B	9.4	20.0	17.3		9.4	23.4	21.5	
9.1	52 59.9	46.0		9.3	14.7	57.5		9.3	20.1	25.6		8.8	26.9	32.6		9.5	50 0.8	52.3	
9.5	53 0.1	3.6		9.4	34.3	3.2	B	7.0	22.9	47.6	K	8.1	17 24.2	30.7	K	7.3	10.2	1.6	K
9.3	24.8	48.0		8.5	20 39.2	8.9		9.4	28.9	19.8		7.2	28.4	52.0	L	9.3	50.4	26.9	
9.3	54 3.3	29.5		9.4	21 45.0	2.0		9.4	42.3	57.9	B	9.3	42.4	18.7	B	8.7	51 20.7	16.4	K
8.7	7.9	45.5	B	9.4	49.7	28.0	B	9.5	57.5	49.1		9.2	18 16.9	0.1	K	9.5	50.9	12.3	
9.5	14.2	55.4	B	8.6	22 33.4	4.0	K	9.4	58.0	3.1		9.0	19 19.5	22.8	K	9.0	52 40.4	42.8	B
8.4	29.8	26.5		9.5	34.7	57.5		8.8	49 56.4	9.0		9.5	41.4	6.4	B	9.5	48.4	22.9	
8.4	35.0	41.0		9.4	23 4.8	34.6		9.4	51 20.4	56.5		9.4	21 11.0	42.2		9.2	57.2	47.2	B
9.4	53.9	22.5		8.9	36.4	3.6	K	9.1	50.7	7.8		8.7	22 14.9	15.3	L	8.5	53 7.9	48.6	L
9.5	56 2.4	32.5		9.5	53.4	1.3		9.4	52 1.3	5.6		9.5	23 4.6	24.7		8.9	15.6	49.4	L
9.2	28.1	24.0		9.0	24 32.7	11.4	K	9.0	40.5	26.7	K	9.5	44.0	53.6		8.7	28.5	28.6	K
9.5	40.0	33.0		7.0	47.9	13.8	K	9.1	52.1	19.9	B	8.6	48.5	28.7	K	9.0	29.0	34.6	K
9.5	57 44.8	48.8		7.5	25 8.1	51.5	K	8.8	56.5	43.6	K	9.3	52.7	5.0		9.0	40.6	5.4	K
9.3	58 0.4	52.8	B	9.5	30.0	12.7		9.3	53 7.2	2.8		9.0	24 7.9	42.6		9.5	54 48.9	2.2	
8.1	28.2	51.0	K	9.4	31.8	32.1	B	8.5	19.9	54.5	L	7.5	12.7	48.6	K	9.5	54.1	58.3	

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	12ᵐ	+37°			13ᵐ	+37°			13ᵐ	+37°			13ᵐ—14ᵐ	+37°			14ᵐ	+37°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	29 54.8	23.5		8.6	0 12.3	3.2		6.5	25 53.3	33.1	K	8.8	53 34.7	12.3	K	9.5	24 39.4	7.3	
9.5	30 4.5	8.6		9.5	24.0	44.1		9.4	26 58.0	31.0		8.8	52.6	4.7	K	8.8	47.8	0.2	B
8.3	48.9	50.3	K	9.4	41.1	43.8	B	9.3	59.7	53.0		8.6	54 10.5	39.7	K	9.5	25 22.9	42.2	
9.5	31 47.4	23.5		9.5	52.6	43.0		9.5	27 5.0	25.0		9.3	28.7	9.6	B	9.4	32.2	15.3	
8.8	32 28.4	6.2	K	8.7	57.0	52.3	K	9.0	28 11.6	55.6	B	9.5	37.0	58.5		6.8	27 25.7	35.8	K
8.0	52.8	47.4	K	9.1	1 2.5	2.0		5.1	18.8	55.6	B	9.3	55 33.4	25.2		9.4	47.7	21.3	
9.4	33 25.6	23.3	B	8.3	9.7	44.8	K	9.3	35.0	15.0		9.5	55.0	2.8		9.5	54.5	30.8	
9.5	54.8	40.5		9.3	23.0	48.5		8.0	49.7	7.3	L	9.3	56 33.8	43.7	B	9.3	28 15.1	38.7	B
9.4	34 13.4	15.7		7.5	58.6	59.9	K	9.1	29 25.8	47.6		9.0	57.0	33.7		8.3	19.0	45.7	K
9.0	18.4	50.0		9.5	2 35.9	43.7		9.5	30.8	12.3		8.0	58 2.0	52.1	K	8.9	33.0	41.7	K
9.5	46.6	52.5		7.5	3 20.5	54.6	K	9.5	30 13.7	42.0	B	9.3	48.6	25.7	K	6.2	44.0	15.8	L
8.9	35 53.3	37.0		9.5	4 15.5	50.9		9.5	48.2	4.9	B	9.1	59 0.1	6.9		9.3	48.4	31.5	
9.5	36 11.8	34.0		9.3	18.6	25.0		5.3	31 1.9	2.2	K	9.5	38.4	3.8		9.0	31 13.3	27.9	K
9.5	58.8	27.6		9.3	18.9	22.0		9.0	27.7	42.7	K	9.3	49.3	15.8		9.4	59.1	9.7	
9.5	37 13.5	46.1	B	9.2	5 11.0	26.5		9.5	33 6.5	8.5	B	8.2	0 30.9	56.1	K	9.1	32 19.0	2.0	K
8.3	17.3	16.6	K	7.8	20.4	41.0	K	9.4	6.9	59.6	B	9.4	1 40.4	1.7		9.4	19.8	10.2	
9.2	30.5	4.3	S	9.5	31.2	45.0		9.5	22.7	8.8		9.0	47.9	41.0	K	8.0	24.1	22.4	K
9.4	42.6	33.4	B	9.5	6 6.4	10.3		8.6	51.9	44.1	K	8.0	2 3.2	25.7	K	9.5	56.7	41.4	
9.2	50.0	3.9	S	9.3	9.6	19.7		9.4	34 54.0	34.2		9.3	6.6	49.2		8.1	33 32.2	8.0	K
8.9	39 12.6	25.0		8.5	17.9	56.0	K	9.4	35 0.2	11.0		9.0	16.7	43.2	B	9.5	34 9.3	57.8	
9.5	13.4	38.0		9.3	35.7	44.5		9.3	43.7	19.8		9.3	3 30.0	19.8		9.5	18.4	12.5	
9.4	23.4	42.0	B	9.5	47.3	22.0		8.9	43.9	59.0	K	8.8	4 26.6	12.1		9.5	56.9	47.8	
8.8	29.3	34.0		6.5	54.4	39.0	L	9.5	47.0	28.2		9.0	59.7	8.6		9.5	35 11.9	51.8	
8.5	40.9	37.9	K	9.5	8 22.5	3.7		9.5	50.2	9.6		9.5	5 15.0	13.9		9.5	36 10.8	29.5	B
8.3	41 17.1	6.9	K	8.8	25.7	24.1	K	9.3	36 25.5	49.1		8.6	6 52.5	14.7	K	8.6	11.8	13.2	B
7.8	32.9	7.9	K	9.5	37.1	15.7		9.0	37 37.3	1.8	K	9.2	7 25.9	33.2		8.3	27.9	14.1	K
9.3	50.9	55.8	B	8.3	49.2	22.6	K	9.4	53.5	36.7		8.5	44.0	15.3	K	8.8	41.6	9.2	K
8.5	53.2	37.5	K	8.3	10 2.0	9.2	K	8.7	57.0	3.3	K	9.1	56.0	55.0		6.8	48.4	22.0	K
9.3	42 5.6	58.7	B	9.5	25.9	38.9		9.1	38 7.9	18.8		9.4	9 9.4	25.7		9.5	37 44.3	58.3	
9.5	10.9	42.9		8.8	38.4	31.2		9.0	41.5	21.3		9.3	17.0	2.0	B	9.4	59.7	39.5	B
8.6	43 17.4	39.6	B	8.1	48.4	34.9	B	9.5	53.7	26.7		8.0	42.5	42.7	K	9.5	39 27.9	24.9	
8.9	44 57.9	14.2	K	9.5	50.7	27.8		9.5	39 23.2	1.1		9.4	10 15.4	22.9		8.9	40 9.5	3.6	K
9.2	45 0.9	18.6		9.4	11 21.7	23.7	B	9.2	32.0	13.7	K	7.8	21.9	49.1	K	8.0	12.0	30.3	B
8.0	47 11.9	46.5	K	9.2	12 44.9	21.0		9.3	40 13.5	30.7		8.8	23.0	59.0	K	8.0	25.4	2.5	K
9.0	40.9	26.5		9.5	53.8	54.5		9.2	41 33.9	47.1		8.8	24.3	20.4	B	9.2	42 27.6	52.3	K
9.5	49 38.3	26.0		7.0	13 8.7	8.0	K	8.9	42.2	4.7	K	9.5	11 7.9	52.5		8.9	43 18.7	29.9	
9.2	43.6	38.5		9.4	10.9	49.8	B	6.5	43 25.9	20.3	K	9.0	57.9	12.4	K	9.4	48.0	24.9	
9.5	50 15.2	51.9		9.4	58.0	35.1		9.5	45 30.1	33.2		9.5	13 11.5	26.2		8.4	44 4.5	12.0	
9.5	44.9	36.5		7.0	59.9	26.1	K	9.2	46 46.0	37.7	K	7.0	14 48.5	3.5	K	9.5	19.0	43.2	B
9.3	52.3	32.0		8.8	15 6.6	14.2		9.1	55.3	38.2	K	8.9	51.4	19.1	K	5.7	46.6	51.8	K
8.1	51 1.1	29.5	K	9.3	21.1	22.6		9.3	47 7.2	1.2		9.4	15 41.7	20.8		9.5	57.4	38.4	
9.3	12.0	19.6	B	8.5	16 13.4	56.9	K	9.5	36.0	54.5		8.7	42.6	3.4	K	9.0	45 7.5	59.2	K
9.5	27.6	44.0		9.4	49.8	11.1		8.9	58.4	44.1		9.1	56.0	20.8		9.4	48 27.3	11.2	B
9.3	49.6	9.7		6.0	17 19.6	47.3	K	8.8	48 4.4	21.8	K	9.3	16 4.2	2.6		9.5	49 21.9	29.9	
9.4	53.1	34.3		9.4	19 13.0	7.9		9.4	9.5	21.2	B	9.4	20.0	17.3		9.4	23.4	21.5	
9.1	52 59.9	46.0		9.3	14.7	57.5		9.3	20.1	25.6		8.8	26.9	32.6		9.5	50 0.8	52.3	
9.5	53 0.1	3.6		9.4	34.3	3.2	B	7.0	22.9	47.6	K	8.1	17 24.2	30.7	K	7.3	10.2	1.6	K
9.3	24.8	48.0		8.5	20 39.2	8.9		9.4	28.9	19.8		7.2	28.4	52.0	L	9.3	50.4	26.9	
9.3	54 3.3	29.5		9.4	21 45.0	2.0		9.4	42.3	57.9	B	9.3	42.4	18.7	B	8.7	51 20.7	16.4	K
8.7	7.9	45.5	B	9.4	49.7	28.0	B	9.5	57.5	49.1		9.2	18 16.9	0.1	K	9.5	50.9	12.3	
9.5	14.2	55.4	B	8.6	22 33.4	4.0	K	9.4	58.0	3.1		9.0	19 19.5	22.8	K	9.0	52 40.4	42.8	B
8.4	29.8	26.5		9.5	34.7	57.5		8.8	49 56.4	9.0		9.5	41.4	6.4	B	9.5	48.4	22.9	
8.4	35.0	41.0		9.4	23 4.8	34.6		9.4	51 20.4	56.5		9.4	21 11.0	42.2		9.2	57.2	47.2	B
9.4	53.9	22.5		8.9	36.4	3.6	K	9.1	50.7	7.8		8.7	22 14.9	15.3	L	8.5	53 7.9	48.6	L
9.5	56 2.4	32.5		9.5	53.4	1.3		9.4	52 1.3	5.6		9.5	23 4.6	24.7		8.9	15.6	49.4	L
9.2	28.1	24.0		9.0	24 32.7	11.4	K	9.0	40.5	26.7	K	9.5	44.0	53.6		8.7	28.5	28.6	K
9.5	40.0	33.0		7.0	47.9	13.8	K	9.1	52.1	19.9	B	8.6	48.5	28.7	K	9.0	29.0	34.6	K
9.5	57 44.8	48.8		7.5	25 8.1	51.5	K	8.8	56.5	43.6	K	9.3	52.7	5.0		9.0	40.6	5.4	K
9.3	58 0.4	52.8	B	9.5	30.0	12.7		9.3	53 7.2	2.8		9.0	24 7.9	42.6		9.5	54 48.9	2.2	
8.1	28.2	51.0	K	9.4	31.8	32.1	B	8.5	19.9	54.5	L	7.5	12.7	48.6	K	9.5	54.1	58.3	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	14ᵐ—15ᵐ	+37°			15ᵐ—16ᵐ	+37°			16ᵐ	+37°			16ᵐ	+37°			17ᵐ	+37°	
m				m				m				m				m			
8.7	54′ 58.7	11.9	K	8.5	31′ 1.2	50.7	K	9.2	4′ 0.5	18.9		9.5	32′ 59.5	49.6		9.5	0′ 15.5	13.2	
9.3	56 4.4	19.5		9.4	11.0	1.4		9.0	5 3.5	51.1		8.8	33 4.4	24.7		9.0	47.3	4.9	B
9.5	58 10.2	28.2		9.0	13.4	58.6	K	9.1	39.7	6.9		9.5	21.7	42.1		8.8	49.7	48.4	B
9.1	21.6	24.5	B	8.8	33 36.8	13.4	K	8.7	6 0.8	47.8	B	8.5	24.0	28.2	L	9.5	55.4	25.1	
9.1	29.7	13.5	K	4.3	55.2	6.5	K	8.3	3.8	56.5	K	9.5	39.0	52.5		9.3	55.7	4.5	K
9.4	30.9	25.8		7.0	35 5.8	29.7	K	9.5	45.3	1.9		8.5	34 51.0	49.6	L	9.5	1 58.8	23.1	
9.5	0 33.1	19.0		9.5	59.8	5.5		9.2	55.5	59.1	K	7.5	35 9.7	37.7	L	9.1	2 3.2	15.6	K
6.1	56.2	1.0	K	9.4	36 15.5	23.3		9.0	7 42.9	0.0	K	8.5	16.0	18.3	K	9.2	26.5	53.9	
9.0	1 50.2	37.4	K	7.8	23.9	30.9	L	9.0	9 30.9	2.2	L	9.5	22.6	4.1		8.3	32.9	42.0	K
9.5	2 48.1	34.9		9.5	38 41.6	6.5		9.5	10 36.8	29.9		9.3	36 0.5	14.2	K	9.5	3 18.0	47.4	
8.2	3 19.9	51.8	K	9.1	39 6.5	28.8		8.6	11 18.5	13.7		9.5	39.7	59.0		8.7	21.5	57.4	K
9.5	31.1	50.8		9.3	25.2	49.2		9.0	25.0	22.3		8.3	38 8.1	18.6		8.8	4 57.1	1.3	K
8.7	4 58.4	34.4		8.7	25.2	36.8	L	8.8	12 15.6	11.9	K	9.4	19.4	2.2		9.4	5 25.2	2.7	
9.5	5 16.0	6.4		8.9	41 27.0	13.8		8.5	20.2	15.9	K	8.8	39 18.7	37.6	K	9.0	6 17.8	26.7	K
9.2	30.2	38.4		8.5	42 4.7	37.6	K	9.5	23.4	38.8		9.3	40 17.1	6.4		9.5	46.7	10.8	
6.5	6 22.4	17.5	K	8.7	24.2	49.1		9.2	41.2	4.8	K	9.0	30.6	20.7		8.9	7 7.5	56.5	K
9.5	45.4	22.6	B	9.2	43 24.7	50.6		8.9	43.3	48.2		8.5	44.5	0.4	K	9.5	22.8	18.6	
9.4	7 1.8	52.1		9.2	44 14.8	35.2	K	9.1	14 2.4	29.1	K	9.3	46.1	21.2		8.2	36.0	24.7	L
9.3	37.4	11.5		9.5	42.2	12.8		9.0	3.4	1.3		8.6	41 7.1	36.5		9.1	52.5	6.2	
9.0	56.5	50.3		9.5	45 21.8	41.1		9.2	15 2.3	38.9	K	9.5	24.1	1.5	B	9.1	8 28.8	41.0	
7.8	9 27.3	22.0	K	9.3	28.4	4.9		7.0	6.3	18.3	K	9.5	26.3	15.3	B	9.1	32.2	34.6	
9.5	10 6.6	14.2	B	8.9	46 18.2	26.3	K	9.0	16 18.9	33.7		7.5	42 34.6	48.5	K	8.5	46.8	50.5	L
9.4	6.7	51.8		8.9	47 23.9	8.4		9.3	47.4	2.8		9.0	43 7.6	3.1	K	8.6	12 10.8	45.6	K
8.7	22.8	47.3	K	9.1	25.7	53.7		9.4	17 40.5	53.2		8.1	29.8	17.1	B	4.5	41.1	25.1	L
6.8	49.1	36.3	K	9.4	48 52.9	16.4	B	9.5	18 50.8	32.7		9.0	32.1	53.4		8.7	43.7	17.6	L
9.4	11 16.3	57.2		9.5	56.9	12.4		7.5	59.2	21.3	K	9.2	37.1	37.8	B	9.1	13 11.5	41.5	
9.2	12 6.1	41.4	K	8.5	50 38.1	7.3	K	9.5	19 14.7	54.6	B	9.4	40.2	29.1		8.4	33.9	53.2	K
9.4	11.5	6.1		9.2	45.5	50.2		9.1	47.2	13.8		9.2	43.9	13.0		9.5	14 1.5	44.5	
9.5	42.7	28.4		9.5	55.2	13.8		9.4	20 10.0	54.6		9.5	55.7	4.4	B	9.5	33.2	28.6	
9.3	13 6.8	56.2		9.5	51 9.8	55.6		5.7	14.8	42.7	K	8.3	45 43.6	35.1	L	8.7	42.6	11.2	L
8.6	52.5	48.2	B	9.0	14.5	45.7	K	9.4	28.1	12.1		9.5	46 4.6	31.5		9.4	15 9.5	3.9	
9.0	14 4.7	13.5		9.4	35.1	1.7		9.2	21 46.8	34.1	B	9.2	21.3	27.6		9.1	12.7	20.1	
9.3	15 58.4	50.8		8.0	53 1.6	38.1	K	9.5	50.5	27.6	B	9.3	29.1	46.0		9.5	22.2	50.9	
9.0	17 7.2	17.0		9.5	12.9	9.5		9.4	22 14.4	29.0	B	9.2	32.5	11.8	K	9.5	16 50.0	22.1	
9.4	18 35.4	22.4		5.8	37.3	2.8	K	9.1	23 15.2	43.2		9.5	47 9.6	59.0		9.4	18 21.0	39.1	
4.0	19 1.6	52.8	K	7.5	41.3	20.8	K	9.5	29.1	32.8		8.6	43.1	34.6	K	9.5	22.2	45.5	
7.0	2.4	50.8	K	9.4	41.3	42.2		9.4	47.0	32.8	K	9.2	48 36.9	9.8		9.4	39.7	9.8	
9.4	35.5	9.1		9.5	54 39.5	12.3		9.5	24 15.9	11.0		9.4	43.2	0.2	B	4.0	40.5	17.0	S
8.9	52.4	42.5	K	9.5	55 37.2	50.8		8.6	26.9	20.8	L	9.2	43.4	6.5	B	8.7	56.5	25.6	
9.4	20 3.1	21.6	B	9.5	56 22.2	27.3		9.5	25 0.5	29.7		9.3	49 20.6	8.5		8.9	19 9.2	46.4	
9.3	48.2	29.8		9.5	57 8.5	5.0		9.4	24.5	58.1	B	8.0	57.8	33.1	L	7.8	9.4	3.8	L
9.3	21 19.7	27.0		9.4	22.2	52.6		8.1	34.4	50.6	K	9.3	50 30.3	12.7		6.8	25.9	5.3	K
8.3	20.2	49.8	K	8.8	32.8	30.2	K	9.5	37.8	59.4		9.2	32.4	0.5	K	9.0	57.5	7.9	K
8.9	27.6	3.7	K	9.4	38.8	18.8		9.0	59.0	34.8		9.2	51 26.1	53.0		8.5	20 10.5	19.3	K
9.3	34.2	30.0	B	8.7	55.6	31.4	K	9.5	26 46.7	1.3		8.4	53 28.3	48.1	K	7.8	33.6	54.7	
9.3	41.6	54.7	K	8.5	56.5	55.7		9.4	27 22.5	29.1	K	8.0	54 41.5	8.4	B	9.5	53.5	10.0	
9.4	23 12.9	0.8		9.4	58 0.0	26.4	B	9.5	31.4	47.5		9.1	44.4	3.0		9.5	59.3	52.5	
9.3	16.8	20.5		6.3	1.7	1.6	K	9.2	28 1.9	44.5	K	9.5	55 23.2	28.1		9.0	22 5.0	12.1	
9.2	34.5	10.0		9.4	3.2	31.4		9.2	27.5	55.0	K	8.5	56 4.1	46.0		9.2	6.3	57.7	K
9.5	24 13.0	12.6		9.4	22.7	31.0		9.5	30 0.0	21.9	B	8.8	10.0	15.7	K	9.4	36.5	39.9	
6.5	59.0	17.5	K	9.0	23.5	40.2	K	8.7	5.4	38.1		9.3	17.2	33.6		9.4	23 13.0	22.0	
9.4	25 45.2	59.8		9.5	59 24.5	42.7		8.5	6.0	18.7	K	9.4	20.4	19.7	K	9.4	28.5	0.8	
6.5	52.7	6.5	K	9.1	31.2	55.6		9.3	13.0	22.0	B	9.5	30.6	23.1		9.3	31.0	6.7	
8.5	57.2	42.9		9.4	0 28.1	5.4		8.2	14.8	12.6	K	9.4	54.4	5.3		9.4	38.2	20.0	
9.4	26 17.4	49.8		9.4	2 23.6	53.2	B	9.4	22.4	43.0		8.2	57.6	11.1	K	9.5	41.7	16.0	
9.4	27 16.6	57.2		9.4	27.9	4.8		9.1	31 6.0	12.7		9.5	57 19.7	3.6		9.4	24 45.0	13.4	
9.5	47.2	41.2		9.4	34.0	51.9		8.8	43.6	11.7	K	9.0	44.3	42.0	K	9.5	51.5	57.8	
9.5	54.0	9.7	B	9.5	43.5	20.3		7.7	32 20.7	47.4	K	8.4	58 15.0	58.6	B	9.3	55.0	24.2	K
9.5	57.7	11.8	B	9.5	3 38.7	6.7		9.1	30.7	35.6	K	9.3	52.3	54.9	K	9.0	25 36.1	47.1	K
9.0	29 40.5	20.7	K	9.1	45.5	28.8		9.5	56.4	42.1		9.5	59 13.4	11.7		9.3	26 8.2	10.6	

2901—2960					2961—3020					3021—3080					3081—3140					3141—3200				
	17ᵘ		+37°			17ᵘ—18ᵘ	+37°				18ᵘ	+37°				18ᵘ	+37°				18ᵘ	+37°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	26	16.8	22.7		9.3	46	6.1	11.3		9.4	2	20.5	21.0		9.4	15	9.7	9.5		7.6	25	12.4	7.3	K
9.5	27	45.7	41.6		9.4		6.2	18.3		9.3		25.4	1.8		9.5		19.4	24.6		9.5		20.3	54.0	
9.3		46.5	33.3		9.0		24.0	33.8		9.0		35.0	29.5		9.2		24.2	11.8		9.5		40.1	48.6	
9.0	28	1.5	28.9	K	9.1		48.5	16.8		9.5		40.7	48.0		8.4		25.9	33.8	K	9.5	26	0.2	52.3	
9.5		56.1	14.2		8.8	47	45.5	19.7		8.8	3	2.0	2.9		9.5		39.3	28.6		9.4		8.0	59.3	
9.5	29	3.2	6.5		9.4		45.6	26.0		9.1		4.0	25.5		8.9		58.4	50.6	K	9.5		13.7	42.3	B
9.3		22.8	21.3		9.0		46.0	13.5		9.5		8.9	35.9		9.1	16	11.9	22.0		9.1		31.3	14.0	
6.5	30	44.2	24.0	K	8.5		57.7	42.9		9.5		11.6	47.9		9.0		16.6	33.3		8.5		33.1	8.3	
9.4	31	13.3	52.5		8.3	48	1.5	36.7		9.2		58.5	13.0		9.3		17.7	48.4		9.4	27	3.9	2.0	
9.5		46.5	50.2		9.4		2.8	4.4		9.5	4	10.0	13.1		9.5		22.9	0.3		9.3		15.5	21.4	
9.2	32	35.5	13.1	K	9.3		19.0	19.7		8.8		20.6	43.3		9.0		40.1	58.3		9.4		18.0	58.5	
9.5		45.5	4.2		9.5		34.0	27.5		9.5		39.0	33.6		9.3		44.1	27.2		9.5		24.4	19.4	
9.5		53.7	57.2		9.1		50.9	56.4	K	9.0	5	7.0	45.7	K	9.3		50.0	46.9		9.5		24.7	27.8	
9.5		55.5	24.8		9.5	49	0.5	4.8		9.5		17.5	26.8		9.5		56.8	46.9		9.3		25.0	3.3	
9.1		59.5	13.1	K	9.3		13.0	30.9		9.5		25.3	24.8		9.0		58.3	22.4		8.5		37.0	41.4	
8.3	33	6.5	1.4		9.5		27.4	6.2		9.5		33.8	21.4		9.5	17	3.7	19.7		7.8		54.9	19.6	L
9.5		7.1	51.6		9.5		37.8	55.6		9.1		33.8	54.3		8.8		4.1	39.2		9.2	28	4.6	38.0	B
9.4		11.0	45.9		9.5		57.0	27.9		9.5		58.5	9.3		9.5		18.9	59.2		9.5		7.7	37.2	
9.5		37.3	9.5		9.0		59.5	13.1		8.3	6	45.6	39.9		8.9		29.0	51.5		9.3		24.3	52.3	
9.3		39.3	48.4		9.5	50	27.5	49.0		8.5		49.0	21.2	K	8.2		29.6	11.0	K	9.5		57.0	59.5	
9.2		42.8	58.2		9.5	51	16.0	45.0		7.7		52.6	51.0	L	9.5		34.4	17.9		8.8		58.2	8.6	
9.5		51.5	38.9		3.5		18.2	15.9	K	9.4	7	8.0	13.1		9.5		59.5	44.6		9.5	29	0.8	32.3	
9.3	34	1.6	56.8		9.0		18.5	38.9		8.5		31.0	37.7	K	9.5	18	14.3	27.1		9.4		26.0	2.7	
9.5		18.0	8.9		9.4		31.6	25.5		9.4		35.3	54.9		9.5		28.0	56.0		9.1		28.5	31.5	
9.4		43.9	1.0		9.5		52.5	38.4		9.0		37.0	28.9		9.5		40.9	17.0		9.3		51.1	11.0	
8.4		45.0	19.2	K	9.5		52.9	30.7		9.5		52.5	11.3		9.4		48.7	39.7		9.5		51.1	4.6	
9.3		45.5	39.6		9.2	52	8.3	5.8		9.5	8	25.0	35.0		9.4		56.3	42.2		9.2	30	3.8	33.7	
9.5	35	1.6	4.8		6.5		15.2	47.0		9.5		39.5	39.6		8.8	19	4.2	13.0	K	9.5		5.1	46.0	
8.6		43.8	56.5	L	9.5		16.5	52.9		9.3		47.0	15.6		8.0		19.4	37.5	K	8.5		13.4	14.9	K
7.3	36	32.5	55.7	K	9.5	53	14.4	5.6		9.4		55.0	39.8		9.5		51.8	39.4		9.3		18.2	0.5	
8.7	37	8.8	58.6		8.5		35.8	53.2		8.5		58.9	6.4		9.5		52.1	44.7		9.3		19.5	5.1	
9.1		36.5	59.1		9.5	54	27.5	11.7		9.5	9	31.3	23.0		9.5	20	46.9	20.8		8.2		21.0	59.8	
9.5	38	6.3	47.0		9.5		45.9	47.5		9.5		36.4	34.3		9.1		52.8	39.6		8.0		44.0	33.0	B
7.5		7.2	38.4	K	9.5		54.6	14.1		9.4		48.5	34.3		9.5		53.0	2.2		9.3		52.8	40.7	
9.0	39	7.9	37.1	K	9.3	55	9.5	20.0		9.5		57.7	7.6		9.5		57.2	49.0		9.5	31	12.1	59.7	
9.4		30.9	1.5		9.3	56	16.0	27.1		7.5		58.0	21.7	K	9.4		57.8	34.2		7.0		15.6	55.5	L
9.5		39.0	11.7		9.5	57	35.1	57.4		9.2	10	2.0	11.6	B	9.5		58.3	53.0		9.2		57.9	33.5	
9.4		54.0	22.0		9.5		51.4	54.0		9.5		45.2	54.0		9.5	21	30.7	47.5		8.0	32	2.4	17.8	K
8.7		55.5	41.2	K	9.0	58	0.2	10.8		9.5		47.8	2.2		9.0		37.1	29.8		9.5		10.3	0.1	
7.5		56.9	56.6	K	9.5		1.0	43.3		9.1		47.9	20.6		7.9		53.8	21.7	K	7.0		34.0	39.4	K
9.1	40	5.5	43.2		8.5		18.9	50.0	K	8.3	11	1.0	34.0	K	9.1	22	9.2	9.6		9.1		39.5	58.8	
9.4		24.4	2.8		9.5		26.0	13.8		9.2		29.8	8.6		9.4		14.3	53.1		9.0		45.7	59.0	
9.5		53.5	14.2		9.3		29.1	31.3		9.2		35.0	18.2		9.4		17.5	18.8		8.0		59.4	18.6	K
9.3	41	50.0	11.0		9.5		42.5	30.7		9.1		47.5	34.8		9.5		33.6	23.4		9.3	33	1.8	54.9	
9.5	42	4.5	53.2		9.2	59	8.0	10.4		8.5		56.0	27.5	K	9.4		39.7	9.0		9.4		3.8	49.8	
9.5		8.9	0.6		8.8		14.1	8.8		9.5	12	5.1	25.8		9.5		50.8	20.8		9.3		5.3	13.5	
9.0		14.5	27.5		9.5		38.0	24.4		9.5		33.6	44.0		9.5	23	4.0	3.3		9.2		8.7	34.2	
9.3	43	33.4	13.8		7.8		55.2	49.5	K	8.8		38.8	58.1	K	9.4		9.4	32.0		9.0		17.4	11.0	K
7.0		58.8	5.8	K	9.0	0	0.2	42.6	K	9.4		53.7	33.1		9.5		39.5	35.5		9.4		36.0	41.9	
9.5	44	9.5	2.9		9.5		12.2	13.5		8.4		59.1	55.1	K	7.5		42.2	9.6	K	9.5	34	11.3	37.7	
9.5		18.5	26.1		9.5		24.3	55.5		9.5	13	0.5	25.5		9.4	24	3.6	6.6		9.4		16.0	3.1	
9.3	45	4.5	34.2		8.8		41.0	26.5		9.3		42.6	4.2		9.5		4.5	51.6		8.9		16.7	11.7	K
9.0		6.7	47.8		8.7	1	12.5	16.9		9.3		44.0	28.2		9.4		4.7	19.7		7.7		33.8	23.5	K
9.1		6.7	20.1		9.4		13.4	5.8		9.5		59.0	23.5		9.2		6.9	48.3		8.7		36.7	41.5	
9.2		10.5	32.3		7.5		14.0	46.4	K	8.0	14	8.4	35.1	L	9.5		30.2	30.2	B	9.3		40.2	47.6	
9.5		21.0	14.5		9.1		23.9	12.3		9.3		14.3	1.8		9.5		40.1	24.3		7.5		46.3	51.8	L
9.2		41.4	43.7		8.8		33.5	41.2	K	9.5		15.9	27.5		9.3		46.3	48.8		8.5		49.1	35.3	
9.0		52.6	0.4	K	8.9		42.9	10.8		8.4		21.6	54.2		9.2		48.9	1.2		9.0		53.5	40.0	
9.5	46	0.3	6.8		8.0		56.0	47.1	K	8.7		42.5	25.8	K	8.7		54.0	57.5		9.2		56.9	58.6	
8.0		0.3	46.1	S	9.1	2	18.0	44.3		9.4		53.9	54.2		8.8	25	0.9	4.1	K	9.0	35	1.3	12.3	K

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵘ	+37°			18ᵘ	+37°			18ᵘ—19ᵘ	+37°			19ᵘ	+37°			19ᵘ	+37°	
m				m				m				m				m			
8.7	35′ 16.8″	34.5	K	9.3	46′ 50.9″	7.3		9.5	57′ 57.5″	48.8		9.5	8′ 53.1″	53.8		9.5	19′ 4.5″	34.0	
9.5	29.4	19.2		7.5	47 0.5	20.9	K	8.2	58 9.6	8.5	K	9.5	9 9.7	1.2		9.5	6.3	58.9	
9.5	35.6	26.9		9.0	8.0	2.1	K	9.4	25.1	18.6		9.4	14.5	50.5		9.5	10.5	31.6	
9.4	59.6	5.4		9.4	9.9	57.4		8.6	36.3	59.2	K	8.0	17.3	23.6		9.5	16.7	41.2	
8.5	36 8.2	9.1	K	9.4	12.2	46.8		9.5	43.8	18.9		9.1	32.6	17.2		9.5	20.0	51.7	
9.3	37.5	22.6		9.5	32.0	39.2		9.5	48.5	42.9		8.8	40.4	27.5		9.3	21.1	50.2	B
9.5	44.4	47.1		7.9	57.7	8.7	K	9.5	59 22.2	38.5		8.2	48.8	43.7		9.2	34.2	29.6	
9.5	48.8	4.6		9.2	48 10.2	40.3		7.4	24.1	53.6	K	9.5	51.9	46.2		9.5	36.8	25.2	
9.5	51.5	20.3		8.7	11.4	46.6		9.4	26.5	51.4		9.2	10 0.3	53.0		9.5	37.1	55.3	
8.9	56.0	58.6	K	8.1	22.4	25.5	K	9.4	26.9	11.6		8.7	1.4	47.7		9.1	40.3	59.0	
9.4	37 5.3	9.5		8.2	22.5	17.7	K	9.1	27.1	1.3		9.3	25.4	12.8	B	9.5	20 5.2	58.1	
9.2	47.5	12.5		9.2	39.8	40.8		8.9	39.7	4.2		9.5	31.9	45.8		9.4	12.5	32.6	
8.2	49.4	18.7	K	7.9	40.2	48.6	B	8.8	59.5	17.2		9.2	32.7	55.8		9.5	14.1	17.0	
9.5	38 3.0	57.7		9.5	45.1	50.4		9.5	0 7.7	41.2		7.5	43.7	2.7	K	9.5	31.9	10.3	
8.5	6.8	34.2		9.4	53.0	30.1		8.8	22.0	50.6		9.1	46.2	56.0		9.5	46.3	25.9	
9.5	12.2	27.4		7.7	56.3	11.9	K	9.5	36.5	30.8		9.2	11 2.9	24.0		9.5	21 2.2	23.4	
9.5	29.0	35.2		9.5	49 5.2	32.0		9.5	59.9	48.4		9.0	7.7	7.9	K	9.4	6.3	45.8	
9.5	51.8	13.5		9.1	16.2	6.9	K	9.5	1 0.6	1.4		4.6	21.1	52.8	K	9.5	8.1	55.0	
8.7	39 22.0	54.3	K	8.9	25.7	7.7	K	9.2	18.4	43.6		9.1	29.1	53.3		9.5	23.4	44.8	
9.0	22.2	11.1		9.4	50 12.9	47.8		9.0	23.8	42.1	B	9.5	47.2	58.7		9.3	46.2	21.6	
9.0	24.1	0.4		9.1	16.3	24.1	K	7.3	24.9	9.9	K	9.5	48.6	8.1		9.1	50.9	10.8	
4.5	46.7	27.7	S	8.6	18.5	51.8		9.4	27.6	36.0		9.4	12 27.9	30.6		8.3	59.5	16.7	
5.5	48.6	26.8	L	9.3	36.0	29.3		9.1	31.2	22.7		8.0	29.2	21.3	L	8.8	22 21.0	51.8	
9.5	48.8	0.8		8.8	41.5	55.0		9.5	2 20.7	33.6	B	9.2	47.2	52.9		9.0	28.4	14.9	
9.4	40 1.4	36.5		8.8	46.2	43.9		9.4	43.3	15.9		9.0	59.5	54.1	B	6.4	31.7	38.9	K
9.3	11.3	47.6		9.2	48.2	22.9	K	9.1	51.2	18.7		9.5	13 5.2	21.4		9.5	32.3	27.5	
9.5	22.9	24.7		9.5	51 5.5	3.8		8.9	3 12.6	45.9		9.2	11.0	25.4	B	9.5	40.9	47.4	
8.1	25.5	5.5	B	9.5	5.5	46.3		9.5	22.7	5.9		9.3	17.9	6.7		9.5	53.9	45.4	
9.0	29.9	26.3	B	9.4	7.6	53.0		9.0	31.4	42.0		9.5	20.1	7.2		9.4	23 0.4	11.0	
9.5	36.4	6.3		9.2	25.4	58.3		8.5	32.2	40.8	S	7.5	44.1	19.1	L	9.2	0.9	48.5	
9.2	47.3	38.6		9.4	59.6	58.5		9.3	4 0.8	6.8		9.0	52.8	8.6		9.4	6.5	33.8	
9.5	41 3.4	14.7		9.5	59.7	20.7		9.5	8.2	51.6		9.4	53.0	2.9		9.1	10.7	38.2	
9.5	7.7	58.2		9.5	52 2.7	40.6		9.5	8.6	35.3		6.2	53.9	11.0	L	9.0	13.5	34.3	
9.5	57.9	47.4	B	9.5	3.5	48.8		9.5	9.5	4.0		9.0	14 21.9	45.6		9.5	22.5	57.7	
9.5	42 2.5	58.9		9.5	41.1	5.7		8.3	20.2	23.2	K	9.5	23.2	23.4		9.4	33.0	50.8	
9.5	33.3	36.4	B	8.6	53 6.0	41.4		9.2	30.5	32.0		9.5	24.5	16.5		9.5	44.6	36.5	
8.0	37.1	5.0	K	9.4	30.2	21.9		6.5	44.5	33.7	K	6.2	33.1	3.9	K	9.5	24 0.3	13.9	
9.5	42.2	47.3		9.5	46.0	19.7		9.4	48.0	13.2		9.5	48.8	43.6		9.5	0.8	8.4	
7.8	43 24.0	39.7	K	9.0	54.1	55.2		8.0	5 11.0	50.7	K	9.4	15 19.4	2.0		9.0	6.5	1.9	
9.5	31.3	52.3		9.5	54 0.5	2.7		8.6	23.6	34.3	K	9.2	37.9	12.7		9.3	17.8	42.9	
9.4	34.1	55.0		8.8	2.1	3.9		9.2	33.3	11.3		9.5	44.2	23.5		9.5	28.4	28.9	
9.5	40.2	4.1		9.4	23.3	11.5		9.2	44.9	11.5		9.1	46.9	6.6	B	9.4	38.6	0.3	
9.5	44 8.4	35.2		9.5	40.1	4.5		9.5	51.1	54.2		9.4	55.3	24.7		9.5	49.5	0.9	
9.5	12.3	39.2	B	9.4	59.6	36.8		8.8	56.6	5.3		9.3	16 4.7	40.0		9.5	25 2.3	24.1	
9.5	12.9	35.9		9.5	55 0.0	33.6		9.4	6 10.3	43.2		9.3	14.0	15.8		9.5	8.1	16.7	
9.0	37.9	35.4	K	8.8	0.9	10.9	K	9.5	14.2	17.3		9.4	43.7	41.2		9.4	14.7	39.0	
9.3	38.2	11.5		7.7	22.9	47.7	L	9.5	26.5	17.9		9.0	49.1	18.2		9.5	33.9	41.2	
9.5	50.4	19.4		9.4	59.4	41.2		9.5	49.3	20.5		9.3	59.0	0.2		9.4	35.2	38.5	
9.2	45 7.1	44.6		9.5	56 1.8	23.2		9.5	7 2.3	24.3		8.8	17 10.8	41.5		9.5	42.7	21.4	
9.3	16.3	51.2		8.4	18.2	6.8	K	9.5	5.9	45.5		8.4	12.6	36.7	L	8.9	47.9	12.8	
9.4	17.3	13.9		9.5	28.5	17.5		9.2	12.4	28.8		8.9	31.2	3.7	B	9.5	51.2	56.0	
9.3	18.5	32.3		9.5	32.7	38.2		9.1	22.3	26.6		6.7	35.1	18.5	K	9.3	26 10.0	50.6	
9.5	27.5	57.7		9.5	35.7	38.7		9.2	55.7	45.4		9.5	41.0	8.9		9.0	24.9	11.8	
8.7	32.4	48.7	B	9.5	57 6.4	48.4		9.2	56.6	36.8		9.2	59.2	53.6		9.1	26.2	21.7	K
9.5	45.9	7.7		7.8	9.6	36.0	K	9.1	57.7	40.5		9.5	18 5.7	6.0		8.0	39.8	42.7	K
9.5	46 4.3	38.3		9.5	13.1	5.5		9.4	8 9.5	1.2		9.5	27.2	23.5		9.2	46.1	54.8	
9.2	23.2	15.6	B	9.5	30.5	26.6		9.4	13.4	29.1		9.5	37.6	53.6	B	9.4	27 8.0	13.3	
9.5	25.5	20.2		8.1	42.2	55.7	K	9.5	31.4	27.9		9.5	41.8	59.1		9.5	8.3	24.1	
9.5	36.7	28.8		9.5	48.3	26.3		8.2	35.5	32.0	K	8.5	53.0	16.3	K	9.1	36.6	16.7	
9.5	37.8	58.1		9.5	56.0	16.2		9.3	42.6	51.3		7.8	54.0	50.6	K	9.5	37.3	32.9	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵐ	+37°			20ᵐ—21ᵐ	+37°			21ᵐ	+37°			21ᵐ	+37°			21ᵐ	+37°	
m		′ ″		m		′ ″		m		′ ″		m		′ ″		m		′ ″	
8.9	48	57.6	44.2	9.5	57	51.5	41.2	9.5	6	36.2	34.2	9.0	15	47.4	0.6	9.4	26	42.8	25.1
9.5	49	14.8	1.0	9.5	58	1.7	46.8	7.5		47.1	58.3	L	9.5	16	25.3	38.5		9.5		43.8	50.0
9.5		16.8	5.9	9.2		19.3	12.7	K	9.5	7	27.9	5.7		9.2		38.9	40.0	K	9.5	27	0.1	32.5
9.1		21.0	30.7	9.5		23.2	35.9		9.5		29.0	23.7		8.8		45.0	6.5	K	9.2		11.6	20.2
9.5		32.5	29.2	9.5		26.5	41.1		9.5		30.5	26.9		9.0		50.9	3.3		9.4		13.9	27.5
9.5		42.8	48.5	9.1		36.4	14.4		9.5		32.5	27.2		9.5		54.6	28.0		8.0		42.9	52.9	K
9.3		59.2	34.9	9.5		37.5	18.9		9.1		33.1	33.0		9.5	17	7.0	56.0		8.9		46.8	49.7	K
8.9	50	1.9	52.9	9.4		39.4	52.4		8.5		37.4	39.4		8.3		10.5	41.4	K	9.5		47.2	36.2	
8.8		4.3	11.7	9.3	59	16.5	34.7		7.8		42.0	48.0	L	9.5		27.2	35.7		9.1		50.8	56.9	
9.5		41.9	3.0	8.5		18.5	42.6	K	9.5		44.7	59.8		9.5		36.9	0.0		9.0		55.0	29.3	K
8.0		53.1	31.7	K	9.4		22.3	58.6		8.8		57.2	57.6	B	9.4		50.6	44.9		9.1		59.6	19.2	
8.7	51	12.0	53.4		8.3		44.9	3.4		9.0	8	5.8	50.0		9.4		52.3	37.5		9.5	28	11.8	0.4	
9.2		14.8	50.4		8.8	0	4.0	54.2	R	8.9		13.0	54.0		9.0	18	2.3	58.8	K	8.8		28.6	59.5	
9.1		18.0	59.0		8.9		23.8	49.8		9.5		18.3	28.6		9.4		17.9	3.4		9.5		28.8	50.8	
8.5		19.8	0.4	K	9.0		33.6	45.1		7.3		20.2	10.5	K	7.8		22.6	2.2	K	9.3		29.0	54.8	
9.3		21.3	12.4		8.7		36.2	10.9	K	9.5		28.9	0.4		8.8		29.0	5.3	K	9.4		39.0	1.2	
8.2		26.3	11.7	K	9.5		52.2	34.9		9.4		53.5	23.5		9.5		41.2	56.2		8.8		48.6	46.1	K
9.5		30.8	50.7		7.5		52.9	27.5	L	9.3		55.2	35.4		9.5		49.9	2.8		9.3		51.7	21.4	
9.5		59.1	58.4		8.6	1	14.9	57.4	K	9.4		58.5	42.6		9.1	19	2.4	39.9		5.0		51.9	53.0	K
9.5	52	1.9	49.2		7.7		27.6	43.9	K	4.0		59.8	25.3	K	9.2		7.1	8.5	K	9.5	29	8.0	40.9	
9.5		9.0	59.8		9.0		28.3	12.3		9.4	9	21.0	4.8		9.0		9.5	43.5		9.5		12.9	27.6	
9.4		20.0	54.9		9.4		35.6	20.2		9.5		35.6	43.8		9.3		13.9	57.4		9.5		17.6	20.4	
9.3		22.5	41.5		9.5		38.0	54.8		9.4		36.0	54.4		9.3		36.5	42.3		9.3		19.2	1.0	
9.3		22.7	47.7		9.5		50.7	7.7		9.1	10	0.5	43.5		9.3		50.1	7.7		9.2		36.1	33.6	
9.4		40.7	23.3		9.0	2	1.3	38.2	K	8.5		1.4	51.9		9.2		56.6	58.3		8.7		54.2	10.7	K
9.3		46.5	41.3		9.5		6.6	44.9		9.4		2.0	30.5		9.4		57.7	53.2		9.5	30	6.4	38.9	
9.5		51.0	6.5		9.0		16.0	5.6		9.0		9.4	16.2		9.5	20	0.0	16.6		7.6		12.3	13.2	K
8.0	53	1.2	34.9	K	9.5		25.0	57.5	B	8.9		16.2	10.5	K	9.5		1.0	0.0		9.5		46.3	37.5	
9.4		2.8	2.2		7.9		26.0	56.4	L	9.5		27.3	37.6		8.5		1.9	53.4	K	9.5	31	12.7	21.7	
9.0		7.1	56.4		9.0		27.6	0.9	B	9.5		30.5	42.3		9.5		1.9	28.0		9.4		22.1	7.6	
7.8		34.7	22.1	K	9.4		33.0	52.3		9.5		56.9	32.1		9.3		13.4	39.6		9.5		32.1	56.5	
9.4		39.2	11.5		9.0		42.5	54.2		9.5		57.7	26.9		9.4		15.4	50.1		9.5		38.0	30.0	
9.0	54	2.5	18.7	K	8.6	3	6.3	22.1	B	9.3	11	6.3	38.2	K	9.5		43.1	42.2		9.3		41.2	35.2	
9.5		5.8	49.8		9.1		10.9	2.9		9.5		15.0	55.0		9.4		47.0	53.7		9.1		54.2	0.3	
9.4		18.0	6.6		9.5		12.6	25.1		9.5		17.0	30.0		9.5	21	15.9	2.1		9.2	32	0.8	1.0	
9.5		45.7	47.9		9.5		25.4	15.2		9.4		30.3	12.6		9.4		34.7	59.7		9.4		1.1	33.9	
9.3		46.1	44.4		9.1		27.0	56.0		9.5		30.8	25.6		9.2		57.8	56.7		9.5		6.1	58.2	
9.1		48.2	34.0		8.7		32.3	11.8		9.5		33.0	31.0		9.4	22	18.0	54.6		8.5		18.4	40.9	
9.3		56.8	56.7		9.0		34.9	52.8		9.2		40.3	37.2	K	9.5		22.8	25.7		9.5		23.0	30.6	
9.5	55	0.2	59.4		9.3		36.8	26.0	K	9.2		45.5	17.7		9.4		32.1	7.4		9.2		26.7	22.7	
8.0		12.0	5.3	K	9.3		52.8	49.9		9.0	12	1.9	26.9		9.5	23	4.8	49.8		9.5		29.2	10.2	
9.5		19.9	3.1		8.8	4	1.6	45.5	K	9.5		27.8	26.0		9.5		44.8	25.6		8.9		41.5	42.3	
9.5		26.9	2.6		8.3		16.4	39.8	K	9.2		34.3	12.9		9.5		51.2	36.2		9.2	33	3.0	54.0	
9.5		34.8	13.2		9.0		51.8	1.7		9.2		52.8	2.6	B	9.5	24	8.4	46.4		9.5		4.9	2.4	
9.3		37.0	53.5		8.0		54.5	19.5	B	9.3		55.5	36.9		9.5		18.2	34.0		9.4		12.6	45.4	
9.5		45.4	27.3		9.5		55.3	5.1		9.4	13	12.1	56.2		9.4		21.2	36.2		9.3		19.7	22.7	
9.1	56	11.1	7.3		9.5		56.8	2.1		9.5		12.3	3.6		9.5		24.4	0.8		9.3		31.9	3.7	
9.2		22.2	10.0		9.5	5	2.6	57.5		9.4		23.6	44.8		8.5		43.7	47.6		9.0		50.2	10.1	
9.5		26.2	10.2		8.4		6.5	37.5		9.0		25.5	33.0		9.4		46.6	59.4		9.5		56.5	18.2	
9.5		35.0	58.8		9.2		16.0	54.7		9.5		26.7	9.8		7.3		54.6	20.1	K	8.6		59.3	12.5	K
9.5		35.5	50.8		9.5		22.6	45.1		6.2		35.4	37.6	B	9.4	25	8.9	3.1		9.5	34	11.0	32.8	
9.2		36.5	18.6		9.5		27.0	17.2		9.4		53.2	10.7		9.2		16.8	49.5		9.4		14.7	22.4	
7.7		42.0	5.4	S	9.1		27.6	44.9		9.5	14	4.4	39.1		9.4		34.3	36.7		9.5		21.9	47.0	
9.1		58.2	34.0		9.1		34.0	29.6		9.1		6.1	31.7		9.5		38.0	6.1		9.3		33.2	42.0	
9.3	57	3.0	28.5		9.5		41.8	0.6		9.5		51.9	16.2		9.5		43.3	1.7		9.5		58.6	8.1	
8.7		15.6	19.1		9.5		51.9	58.6		9.5		56.3	56.7		9.4		43.6	39.6	B	9.1	35	23.9	6.5	
9.3		18.9	27.5		8.5		53.6	32.4		9.5		57.7	23.9		8.5		53.6	45.3	R	9.5		40.0	0.3	
9.2		21.1	7.0		9.5	6	0.2	1.4		9.1	15	21.5	52.8		9.2	26	12.0	55.2		8.9	36	20.0	58.8	
7.5		38.2	34.7	K	9.3		8.9	51.4		8.8		32.2	56.1	K	9.5		20.9	3.1		9.1		29.0	12.2	
9.4		49.8	49.8		9.5		21.4	59.6		9.5		46.6	20.0		9.0		31.1	9.0		9.3		38.0	24.6	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ʰ	+37°			21ʰ—22ʰ	+37°			22ʰ	+37°			22ʰ	+37°			22ʰ	+37°	
m		′ ″	′	m		′		m		′		m		′		m		′	
8.8	36′ 42.2	45.5		9.1	52′ 10.8	7.7		8.5	8′ 31.4	46.3	K	9.3	20′ 57.8	22.1		9.5	30′ 47.5	2.8	
9.4	47.9	4.2		8.5	45.0	13.9	K	9.3	9 8.2	30.7		9.2	21 8.1	8.5	B	9.3	48.8	5.8	
9.5	52.5	26.4		9.3	54.5	23.6	B	9.0	12.0	46.2	K	8.9	11.5	9.5	K	9.2	50.6	15.7	
8.0	55.0	12.9	K	9.5	56.0	57.0		8.4	14.2	0.8	K	9.1	12.6	15.7		9.5	59.2	55.5	
8.2	57.9	32.2	K	8.2	53 20.9	17.2	K	8.6	33.8	10.2	K	7.8	22.3	5.1	K	9.5	31 30.9	26.1	
9.3	37 0.3	35.2	B	9.3	34.5	25.8		4.8	39.9	1.3	K	9.5	39.2	17.3		8.9	51.5	24.0	
7.8	17.9	21.2	K	9.3	54 18.7	32.9	B	9.5	43.3	31.0		9.5	22 3.6	27.2		9.2	54.3	44.9	
6.0	26.9	37.5	K	9.5	59.4	21.6		9.5	56.9	38.9		9.5	37.7	20.4		8.8	32 23.5	52.3	
9.3	28.3	28.3	B	8.7	55 6.3	51.8		9.5	59.8	51.0		9.5	40.3	45.6		9.5	36.1	32.4	
7.2	36.9	39.2	K	8.9	17.8	8.4		9.3	10 4.9	38.3		9.4	23 7.3	55.9		9.0	41.9	48.2	
9.5	45.8	53.2		8.5	49.4	3.9	K	9.1	11.6	14.0	K	8.6	9.5	12.9	K	6.9	33 2.1	59.5	K
9.5	54.2	53.3		9.5	55.4	41.7		9.4	34.7	31.5		9.5	15.6	47.2		9.3	10.4	11.6	
9.5	38 7.4	46.6		8.8	56 9.0	20.0		9.4	45.3	46.4		9.5	36.4	58.6		9.3	11.5	17.3	
9.5	17.1	6.0		8.7	32.4	26.7	K	9.4	11 29.3	27.9	B	8.0	50.5	56.4	K	9.0	17.2	23.0	
9.5	51.3	5.3		8.3	57 10.2	1.1	K	8.3	38.5	53.7	K	9.2	24 2.8	1.8		8.8	30.6	45.7	
9.1	39 6.5	46.5	B	9.5	28.7	57.5		9.1	12 10.6	9.1		9.2	6.7	4.5		8.7	32.0	52.6	
9.4	8.4	44.0		9.4	37.3	28.3		6.5	35.4	2.1	K	9.5	47.1	54.6		9.4	42.1	13.8	
8.5	18.2	40.3	K	9.2	48.8	58.7		9.5	58.3	48.7		9.1	49.2	17.1	B	8.8	45.9	10.9	
9.5	40 29.5	46.5		9.5	58 2.0	23.8		9.5	13 40.6	23.4		9.2	50.5	34.8		9.1	56.5	57.6	
9.5	33.8	34.6	B	9.3	12.0	55.3		9.5	14 0.4	15.1		9.1	51.2	22.1		9.0	34 23.8	50.2	
9.3	58.0	18.7		9.5	16.0	48.2		9.5	26.1	19.6		9.3	25 19.8	13.7		9.5	26.5	27.0	
9.2	41 0.1	19.7	B	9.4	41.0	18.3		9.4	26.9	45.3		9.3	37.2	13.4		9.5	28.4	34.0	B
8.7	5.0	39.6		9.5	44.2	49.4		9.2	30.4	59.8		9.5	59.3	25.0		8.4	29.0	55.3	L
9.5	46.5	41.2		9.5	59 11.9	50.6		9.3	33.1	53.5		8.9	26 4.7	6.7		9.5	35.8	8.4	
8.5	48.9	31.9		9.5	29.5	34.3		9.3	34.0	28.7		9.2	12.4	34.4		9.5	50.5	48.4	
9.0	42 18.0	11.0		9.5	29.5	20.0		9.1	47.8	51.2	K	9.5	15.3	10.3		9.5	53.7	35.3	
6.3	29.3	58.6	L	8.3	52.0	40.8		9.5	15 5.4	5.4		9.5	21.1	58.8		9.1	35 31.4	47.4	
8.3	48.0	18.8	K	8.8	0 53.3	23.8		9.5	21.8	41.0		9.5	30.5	27.4		9.5	41.5	52.8	
9.2	54.9	57.0		7.8	54.5	10.3	K	8.7	55.7	38.4		9.5	31.4	8.9		8.8	36 16.9	5.8	K
8.5	43 2.4	25.3		9.3	1 8.3	59.9		9.2	16 7.4	10.7		9.5	49.1	34.2		6.5	21.6	2.6	K
8.8	7.9	10.1		9.4	11.2	58.7		9.5	12.0	19.1		7.5	53.5	22.6	K	9.5	27.2	18.4	
9.0	16.5	35.8		9.5	2 0.0	24.3		9.4	33.5	38.4		9.4	27 7.5	34.7		9.5	29.3	40.5	
8.1	17.0	41.8	K	9.5	30.6	31.4		9.2	37.9	52.2		9.3	13.3	30.2		9.2	37.5	30.9	
8.5	24.0	46.5	K	9.4	32.3	25.3	B	8.9	43.1	18.4	K	9.3	22.1	41.0		9.5	41.6	43.5	
8.6	27.7	22.6		9.1	35.5	45.7		8.8	49.2	54.9	K	9.4	32.7	53.9		9.1	57.7	27.7	
9.5	32.1	37.2		9.4	3 1.0	31.1		9.5	51.5	57.6		8.6	39.4	37.6	K	9.4	37 15.2	12.5	B
9.5	43.5	20.3		9.5	18.4	31.8		9.5	17 5.6	34.9		9.1	46.3	13.1		9.5	30.4	7.8	
8.3	53.4	5.2	L	9.1	36.7	48.2	B	9.5	21.5	3.3		9.2	28 2.9	39.2	B	9.5	48.9	56.0	
9.5	44 16.0	10.6		8.8	42.5	47.9	B	8.8	22.7	34.9		9.4	16.6	4.5		9.5	38 4.5	35.2	
9.5	23.3	58.0		8.3	47.0	36.3	K	6.8	29.4	50.0	K	9.5	17.8	17.2		9.5	18.0	59.3	
8.0	45 55.4	45.6	B	9.5	4 9.1	45.0		9.5	32.9	3.3		9.3	28.0	8.7	B	8.3	28.5	55.0	B
9.3	46 5.8	51.0		9.2	17.2	4.2		8.8	50.1	30.5		9.4	29.3	7.7		9.4	55.9	59.5	
9.0	9.5	44.5		9.1	41.3	55.2		9.5	18 3.6	51.7		8.3	34.9	10.6	K	9.5	39 4.3	24.2	
8.5	54.9	40.0	K	9.4	41.8	6.2		9.5	6.3	34.9		9.5	54.4	43.0		9.5	6.4	3.6	
9.5	47 25.8	26.8		9.3	46.5	39.4		9.5	23.8	39.0		9.1	29 1.0	26.8	B	9.5	24.8	24.4	
9.5	29.2	57.7		7.3	5 32.4	42.5	K	9.2	19 6.4	39.9		9.5	11.3	45.7		7.8	32.5	44.4	K
9.3	31.7	15.7		7.5	46.8	10.3		8.6	7.5	10.0	K	9.4	23.5	7.4		8.4	52.5	37.2	K
9.3	55.5	34.0		9.5	58.2	12.0		9.4	10.8	28.0		9.1	32.4	37.5		8.0	56.6	39.3	K
9.3	48 17.0	18.1		9.5	6 11.0	50.5		9.5	20.1	17.7		9.2	37.9	5.3	B	9.5	40 8.2	55.7	B
9.5	35.0	41.9		9.0	21.5	52.5		8.6	20.7	42.6	K	9.3	50.9	55.6		9.5	26.5	14.5	
9.0	36.4	32.3		9.0	25.7	50.1		9.5	49.5	7.5		6.9	51.5	5.3	K	9.1	40.0	28.3	
9.2	41.7	45.4	B	9.0	28.0	20.3	K	9.5	54.3	21.2		9.2	52.2	20.6		9.4	41 48.6	4.5	
9.5	42.4	43.9		8.5	50.6	44.3	K	9.1	20 9.1	53.0	B	8.5	52.3	1.8	K	8.2	53.3	17.2	K
9.5	50 27.1	1.3		9.5	56.1	2.5		9.5	15.4	57.3		9.3	58.1	6.3		9.3	57.7	2.0	
9.5	32.0	4.4		9.5	7 35.9	33.9		8.3	17.1	53.2	B	9.5	59.8	45.8		8.5	42 0.2	32.4	
9.5	41.8	4.8	B	9.5	50.4	55.4		9.2	24.5	34.9		9.1	30 4.3	4.4		8.5	3.2	20.9	K
9.0	56.7	13.6	K	9.5	52.3	44.2		9.2	30.2	41.1		8.8	4.7	25.1		9.1	7.6	14.4	K
8.9	51 3.5	38.5		8.4	56.4	1.3	K	8.7	31.8	59.3	B	9.5	21.2	52.3		9.1	12.1	52.1	
9.5	16.1	52.8		8.9	8 10.3	44.6		9.5	37.0	53.0		9.5	41.4	27.9		8.0	12.9	45.5	K
9.3	52 2.5	43.6		8.8	17.2	40.1	K	9.4	56.2	37.4		9.1	44.0	32.7		9.5	33.3	46.9	

4701—4748					4749—4796					4797—4844					4845—4892					4893—4937				
	22ᵘ		+37°			22ᵘ—23ᵘ		+37°			23ᵘ		+37°			23ᵘ		+37°			23ᵘ		+37°	
m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′		m		′ ″	′	
9.3	42	33.8	13.7		9.5	55	40.7	0.1		8.5	8	34.7	30.3		9.5	20	22.1	35.7		9.2	43	37.4	54.1	
9.3		41.5	38.3		9.5		57.2	11.2		9.2		58.0	58.5		8.3		36.2	26.7	K	9.2		51.3	56.6	
9.5	43	23.0	25.2		9.2	56	4.6	7.3	K	9.5	9	21.0	21.8		8.5	21	17.5	58.0	K	9.4		53.0	21.5	
9.5	44	11.4	23.8	B	7.5		32.7	31.2	B	9.3		24.9	5.0		9.5		44.0	27.5		8.9		54.1	50.8	
9.5		14.2	0.8		9.5		53.4	23.6		7.6	10	0.7	10.1	K	9.4	22	3.2	31.9		9.3		58.1	31.5	B
8.9		34.7	34.8		8.9		56.7	3.3	K	9.4		15.4	17.8		8.7		12.4	26.4	K	6.7	44	36.8	5.0	S
9.4		41.5	56.6		9.3	57	1.9	32.0		9.4		30.9	25.0		8.7		14.1	19.9	K	8.7		49.4	1.5	L
9.5		50.0	9.6		9.3		8.1	55.8		9.5		46.6	44.3		7.9		34.0	50.2	L	9.5	45	18.1	22.6	
9.4		53.1	58.4		9.5		15.4	7.3		9.5		56.8	49.5		9.5		51.1	33.2		8.3		31.3	53.0	K
8.7		57.4	55.0	K	8.9		20.1	51.1	K	9.5	11	1.4	5.5		9.3	23	7.0	36.4	K	8.8	47	12.2	59.9	
8.6	45	10.0	17.2		9.1		30.8	30.9	B	9.2		11.7	58.1	K	9.1		21.0	34.7	K	8.0		43.4	15.7	K
9.3		13.3	57.2	K	9.0		39.8	35.9	K	9.5		23.5	11.4		6.5		35.0	51.1	K	9.4	48	12.3	22.3	
8.2		37.5	59.1	K	9.3		58.6	18.3		8.7		24.6	8.7	K	9.4		41.5	26.4		8.8		21.1	40.1	
6.8	46	15.1	51.0	K	9.4	58	37.8	8.6		9.5		41.9	22.3		9.5	24	24.8	56.7		9.5	49	9.5	52.9	
8.7		31.2	0.4		9.2		46.4	55.1		9.5		51.3	28.0		9.5		27.6	44.6		9.4		44.1	26.7	
8.0		50.9	40.8	K	9.5	59	7.1	24.1		9.5		56.6	15.9		9.3		41.8	4.3		8.7		51.1	1.4	K
8.6		59.2	9.0	K	7.7		37.6	47.2		9.5	12	55.0	29.7		7.5		54.1	30.2	L	9.4	50	33.7	12.0	
9.5	47	19.9	40.1		9.1		46.7	47.6		9.5	13	4.5	58.3		8.3	26	7.9	52.3	K	9.5	51	45.4	14.8	
9.0		23.1	26.5	K	9.3		50.5	56.0		9.5		7.1	24.8		9.5	27	2.0	49.5		9.0	52	3.1	39.6	
9.4	48	7.4	24.0		7.7	0	5.2	14.0	B	8.8		45.2	22.6		9.5		16.8	13.3		6.4		49.5	29.8	B
9.3		37.3	49.0		7.5		6.2	27.2	K	6.0		54.5	23.1	L	9.4		27.9	57.8		9.5		51.3	11.0	
9.2		53.1	6.4		9.3		13.8	9.4	B	9.5	14	2.7	30.0		6.2		40.2	13.7	K	9.1	53	11.3	3.3	
8.6	49	1.9	59.6		9.5		52.9	57.8		9.1		17.6	3.8		9.5	28	32.1	50.1		9.1		20.1	40.3	
9.2		18.2	45.4		9.5	2	20.1	20.2		7.3		20.5	47.9	K	9.5		40.0	3.6		9.1		24.1	43.1	K
9.1		20.6	57.9		9.5		25.8	38.2		9.5		28.5	58.6		9.5	29	6.4	52.9		9.1		27.8	1.0	
9.3		23.5	11.7	B	9.5	3	15.2	34.9		9.4		49.4	45.6		9.3		48.5	54.1		9.4		51.7	25.4	
9.5		30.2	10.2		9.2		23.7	34.9		9.3		57.2	53.3		9.1		49.1	7.6	K	8.9		52.8	5.3	K
9.3		44.0	59.1		9.2		30.6	25.3		9.4	15	6.8	41.9		8.5		55.0	55.8	K	9.2	54	7.8	4.8	K
9.4		47.1	38.6		9.1		34.8	9.0	K	9.5		11.5	46.1		9.0	30	6.4	31.6	K	9.5		47.1	12.5	
9.3	50	14.3	53.8		9.4		56.3	48.5		9.2		12.1	54.0		9.5		22.5	50.8		9.2		51.3	40.0	
9.5		32.0	45.2		9.5	4	9.0	29.8		9.4		39.4	55.5		9.4		49.3	23.7		9.5	55	0.5	56.6	
9.5		48.8	5.2		9.5		20.4	34.4		9.5		51.5	38.0		9.3	31	0.1	59.5	B	9.5		8.7	39.4	
9.2	51	3.3	15.0	K	9.5		21.6	27.5		9.4		59.5	57.2		9.0	32	45.1	16.5		9.0		18.3	1.0	K
8.7		3.3	52.5		8.3		26.5	6.3	K	9.5	16	45.6	41.8		9.4	33	45.4	39.8		8.8		50.1	27.0	K
9.3		33.9	40.1	B	9.3		29.6	26.2		9.5		48.2	59.1		9.2	34	10.6	42.7		8.8		54.6	25.3	K
8.5	52	3.1	21.7	K	9.4		33.1	27.0		8.9	17	7.1	17.1		9.1		21.7	27.2	K	9.5	56	17.4	3.9	B
8.9		5.7	52.9		7.5		34.6	25.8	K	9.4		12.5	5.3		8.6	35	10.0	8.3	L	9.5		18.6	5.9	
9.4		39.8	37.2		9.5	5	3.6	33.7		9.4		43.6	1.1		8.2	36	33.4	6.6	B	9.1	57	20.7	21.7	K
9.0		43.1	1.1	K	8.7		22.1	59.6	K	9.3	18	9.0	59.3		9.5		43.4	57.8	B	8.3		24.6	57.6	L
8.9		51.1	39.9	B	9.3		50.6	3.5		9.3		44.6	47.9		9.0		53.3	1.3	K	9.1		35.0	7.3	K
8.6	53	10.2	50.8		9.5	6	13.5	54.4		9.3	19	2.3	38.2		8.7	37	2.1	18.5	L	9.0		51.8	55.0	
8.3		25.1	36.4	K	9.3	7	0.7	14.6		9.5		19.0	45.1		9.5		40.3	33.3		9.0		57.1	56.4	K
8.9		30.1	28.9	B	9.5		13.7	49.6		9.5		32.5	4.5		9.2	38	18.6	51.8		9.4	59	13.2	14.2	
6.7	54	11.9	56.1	K	9.5		22.9	39.5		9.5		53.7	32.2		9.5		49.0	57.0		8.0		21.3	49.1	K
9.5		28.5	4.5		9.5		34.3	17.8		9.5		56.6	50.5		9.3	39	15.1	44.9	K	8.8		27.6	24.3	
9.5		44.1	8.8		9.4		42.1	2.8		8.6	20	1.5	11.0	K	8.8	40	25.9	24.3	K					
9.5	55	10.9	31.3		9.4		44.4	34.7		8.1		6.4	13.5	K	9.5	41	28.2	50.1						
8.9		18.8	10.3		9.5	8	27.6	42.1		9.1		10.7	9.5		9.3	42	0.2	42.6	K					

Zone +38°

1—40					41—80					81—120					121—160					161—200				
	0ʰ		+38°			0ʰ		+38°			0ʰ		+38°			0ʰ		+38°			0ʰ—1ʰ		+38°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	0	8.4	53.1		9.3	16	56.3	53.4		9.4	31	14.7	54.9	B	9.5	43	3.2	47.0		9.0	51	30.7	32.7	
7.5		14.2	15.1	K	8.5	17	25.7	21.4	L	9.4		31.3	54.6	B	9.0		20.8	22.7		8.2		32.6	53.4	K
9.4	1	7.6	32.0		8.5		27.6	16.1	L	9.5		33.3	49.3		9.5		29.7	7.5		9.5	52	20.4	58.9	
9.0		24.3	17.5	K	9.5		33.3	34.4		9.5	32	11.8	3.8		8.9		39.7	38.6		9.5		32.5	59.2	
9.5	2	14.2	2.5		9.3		37.9	31.9	B	8.3		17.2	37.6	L	9.3	44	24.2	42.0		9.5		47.5	2.5	B
8.6		38.3	51.4	K	8.3	18	8.8	3.4	K	9.5		33.9	58.4		9.5		34.4	3.9		9.1	53	4.8	30.2	
9.5		55.5	34.4		9.0		9.4	38.4		9.2		39.3	34.9	B	9.2		42.7	44.5	K	9.1		22.3	49.0	
8.6	3	24.1	57.5	K	9.3		38.3	8.5	K	8.0		42.2	43.5	L	9.1		52.1	6.7		9.4		23.7	27.6	
8.9		29.2	28.6	R	9.5	19	1.8	28.6		9.5		55.9	59.8		7.8	45	1.2	14.1	K	8.7		24.1	50.7	L
9.5		54.6	40.7		9.5		4.5	36.6		5.5	33	17.1	39.0	G	8.9		2.2	23.7		8.9		28.2	2.4	
9.5		56.2	35.1		9.3		44.7	56.1	B	8.0		21.4	47.9	L	8.1		4.9	22.2	B	9.3		51.9	39.5	B
8.2	4	36.0	14.7	K	9.0	20	12.2	45.2		9.2		23.3	42.8		9.3		20.6	30.6	B	9.2	54	0.6	0.2	B
9.3		56.6	47.3		9.0		17.5	8.0	K	9.4		28.8	31.9	B	9.3		28.9	59.7		9.5		1.9	33.0	
8.3	5	7.8	29.3	K	8.4		55.7	17.9	K	7.6	34	0.6	5.9	K	8.5		35.3	54.1	K	8.5		22.1	50.7	B
9.2		12.0	35.9	K	9.5	21	6.2	2.4		8.5		3.8	14.1	K	9.5		41.9	53.1		9.5		22.8	1.5	
9.0	6	24.0	57.9	K	9.4		11.7	35.5		9.4		29.0	32.2		8.0	46	19.1	16.1	K	8.0		27.7	41.7	K
9.1	7	11.6	14.2		9.4		21.3	53.1		9.3		40.9	55.7		9.3		19.8	25.8		9.5		35.3	56.8	
9.5		39.4	59.3		9.0	22	32.9	35.8		9.5		55.7	22.8		8.6		35.5	7.2	B	9.5	55	30.9	43.3	
8.3	8	12.7	13.0	K	9.5		37.7	2.9		9.3	35	18.6	23.8		9.0		38.7	22.4	K	9.4		52.9	14.0	B
9.5		24.0	8.0		9.5	23	9.2	32.4		8.8		25.2	38.7	K	8.2		39.0	22.8	K	9.5		54.2	15.7	
9.3		28.1	10.9	K	9.2		12.8	42.7		9.5		56.5	4.9		9.5		51.2	53.5		9.5	56	7.5	52.0	B
9.5	9	10.1	22.4		8.6		21.0	40.3		9.4		58.3	56.2		9.5	47	12.3	57.4		9.5		14.6	1.7	
8.5		21.4	59.9	K	8.5		37.2	13.3	K	9.5	36	49.4	18.9		9.5		19.2	23.7		8.2		34.8	7.4	L
9.3		40.8	36.0		7.3		42.1	10.9	K	9.5	37	0.5	53.4		9.4		29.2	14.1		8.9	57	15.0	28.2	
9.2	10	3.0	24.7		8.7		48.2	30.6	K	9.2		5.8	56.4	B	9.4		43.5	55.5		9.5		20.2	4.0	
9.5		5.6	57.8		9.3	24	16.8	39.3		9.3		30.6	45.2		8.6		58.3	22.8	K	9.5		29.1	46.2	
9.5		56.4	3.0		9.0		23.7	22.0	K	9.2	38	32.4	2.9		8.9	48	2.6	57.7	K	8.0		42.4	35.8	B
9.2		57.1	54.1		7.0		58.8	2.8	K	8.6		42.9	49.5		6.8	50	8.2	41.7	K	9.5		52.8	57.9	
9.5	11	42.7	22.1		9.0	26	4.5	48.3		9.5		46.7	57.0		9.5		21.2	19.7		9.5	58	14.3	53.5	
9.2	12	4.9	51.4	K	9.4	27	10.2	39.4		9.5	39	20.0	7.6		9.4		22.0	12.4		9.2		16.2	38.7	K
8.2		19.2	43.3	K	9.5		13.3	4.6		9.3		20.9	31.4		9.4		40.0	34.7	B	9.3		34.8	54.1	
9.3	13	11.9	34.1	K	8.4		19.4	22.7	S	7.8		26.2	14.4	K	9.1		44.8	6.4		9.4	59	45.0	15.0	
9.1	14	7.0	7.5		8.3		35.4	9.3	B	9.5		53.2	46.6		9.5		59.5	3.2		9.5		45.7	8.6	
9.5		14.4	56.0		9.0	29	0.9	29.3	K	9.3	40	29.4	36.6		8.7	51	1.1	8.9		7.9		51.0	28.6	B
9.4		16.5	50.8		8.7		1.5	49.3		8.7		37.4	59.8	K	8.0		3.2	49.4	K	9.5	0	24.2	40.4	
9.4		17.5	45.5		9.0		16.2	11.1	K	9.1	41	21.5	40.4		9.5		5.0	34.4		9.3		33.3	43.9	
9.2		50.8	14.8		9.5	30	0.0	35.1		9.5		32.3	9.3		9.2		9.7	12.0	R	9.3		49.8	4.1	
9.5	15	18.7	0.7		9.4		5.7	51.5		9.0		59.6	27.9	K	9.5		13.2	27.3		9.5		55.5	30.1	B
9.0		22.2	19.8		8.7		6.7	33.0	K	9.5	42	11.0	1.2		9.3		25.3	43.8		9.5	1	18.0	49.0	
9.5	16	14.2	38.7		8.3		16.5	53.6	K	8.7		26.4	4.4	K	9.1		26.6	50.2	K	9.5		30.8	59.0	

201—260				261—320				321—380				381—440				441—500			
	1ʰ		+38°		1ʰ		+38°		1ʰ		+38°		1ʰ—2ʰ		+38°		2ʰ		+38°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.2	1	36.0	3.2	B	9.2	17	31.9	10.4	K	9.3	32	40.1	44.7		8.8	49	3.9	31.1		9.5	6	16.5	43.5	
8.9		40.5	51.9		9.2	18	29.8	54.9		9.5		45.1	51.7		9.0		31.9	23.6		8.0		31.6	28.3	K
9.5	2	1.8	40.4		7.7		54.7	54.7	K	8.3	33	21.5	45.0		8.6		41.0	59.5		8.5	7	22.2	32.8	
9.5		18.2	29.2		9.5	19	21.3	56.8		9.5		25.3	50.4		9.3		45.7	7.9		9.0		33.0	9.3	
9.5		42.7	19.2	B	9.5		29.0	0.0		9.5		36.9	13.3		8.9	50	35.6	23.4	B	9.3		40.0	59.3	B
9.5	3	22.9	56.6		9.3		29.0	27.8		8.3		40.0	42.2		9.2		36.8	12.8		9.4		44.5	29.8	
9.3		23.0	9.3		8.0		36.2	35.0	K	8.6		41.8	35.2		9.3	51	28.8	1.7		9.0		48.6	3.8	
9.2		29.7	1.2		9.5		42.5	57.8		9.5		53.2	2.0		9.4		31.4	25.0		9.3		51.1	47.5	
9.3		54.8	52.5		9.0	20	21.5	42.0	K	9.5	34	16.2	56.8		8.2		41.8	49.9	B	9.3	8	5.7	58.1	B
9.1	4	3.1	47.5	K	9.3		22.0	50.7		9.4		17.9	6.0		9.0		49.7	4.1		8.7		7.6	12.6	
9.3		33.3	57.3		9.3		36.3	30.7	B	9.1		32.8	32.8	K	9.0	52	6.9	54.1	B	9.3		48.7	45.9	
9.5		33.5	6.1		9.1	21	53.8	34.7		9.5		39.8	2.0	B	7.8		7.0	54.7	K	9.1	9	18.3	59.7	
9.4		47.9	5.0		8.5	22	14.8	1.6	K	9.5		59.4	41.1		9.0	53	18.2	24.3	K	9.0		19.1	39.3	
8.6		59.6	17.4	K	9.5		16.2	28.1		9.3	35	4.3	45.1	B	9.5		40.4	1.6		9.1		19.9	41.5	
9.4	5	6.1	25.5		7.3		39.8	44.7	L	9.3		9.2	59.2	K	9.4		40.4	47.5		8.5		31.3	25.0	K
9.5		8.7	18.2		8.5		46.0	38.4		9.5		18.7	42.6	B	9.2	54	32.3	45.1		9.5	10	9.2	15.0	
9.5		18.8	50.3		9.4		46.5	13.9		9.4		36.7	40.1		9.4		49.7	15.3	B	8.4		44.0	48.9	K
9.4		18.8	45.5		6.6	23	4.8	1.1	K	9.4		43.5	27.5		9.1	55	22.5	25.4		9.2		49.0	50.0	K
9.3		36.1	17.5	K	9.5		24.9	11.2		9.5		56.1	34.8		9.0		26.6	35.9		9.1	11	0.5	54.8	
7.5	6	31.6	40.4	L	9.2		28.6	53.7	K	9.0	36	1.4	36.8	B	9.0		35.1	26.1		9.4		17.8	40.3	
9.5		55.2	23.7		9.3	24	0.2	23.6	B	9.1		23.3	32.6		8.5		37.5	42.1	K	9.4	12	10.3	14.9	
8.5	7	0.8	3.2		9.3		11.1	54.6	K	8.0	37	30.4	53.1	K	8.0	56	2.8	44.6	K	9.2		14.0	20.8	
9.5		24.4	7.7		9.2		34.3	38.0		8.7		39.5	54.3	K	8.8		28.1	42.0	K	9.3		42.1	43.4	
9.1	8	17.4	18.9	K	9.5		45.4	57.9		9.4		44.3	57.6		9.5		47.1	46.6		9.5		48.4	0.6	
9.2		25.9	23.6	K	9.3		46.0	9.5		9.5		46.3	48.4		9.1		58.4	50.5		8.7		49.9	43.1	S
9.5		26.2	36.1		9.4	25	16.2	44.4		9.5	38	11.2	53.7		9.0	57	34.3	35.2		8.9		56.5	56.2	
9.3		28.9	42.7	R	9.4		37.3	25.3		8.3		12.9	12.2	S	9.5		36.9	28.8		9.5	13	15.2	25.4	
9.3		34.7	51.3		9.4		46.6	30.9		9.5		14.5	20.3		8.2		41.8	12.1	L	9.3	14	13.4	15.1	
6.8	9	2.1	42.5	K	8.7		54.9	53.5	K	7.1		19.2	1.1	K	9.4		56.9	10.1	B	9.2		25.4	15.8	
9.5		27.4	27.4		9.5		56.7	57.5		9.3		41.3	39.7		9.3	58	40.7	27.5	B	9.5		50.0	58.9	
9.5		37.9	0.2		7.9		59.6	5.9	K	9.5		45.4	57.8		9.5		44.1	2.3		9.5	15	8.3	21.2	
9.2	10	5.5	9.7	B	9.5	26	7.3	8.1		9.3	39	27.5	53.2		9.1		49.2	28.2	K	7.5		16.0	41.3	L
8.1		6.7	1.5	K	9.5		36.2	46.8		9.3		46.8	38.6		8.2	59	40.8	42.4	K	9.3		26.0	3.3	
9.1		21.5	9.3	K	9.3		43.8	3.0		9.3		50.2	57.9		9.5		42.0	53.9		8.9		37.5	11.4	K
9.4		43.3	57.8		8.9	27	3.5	14.9	B	8.6	40	45.3	44.5		9.5		46.0	56.9		9.5	16	20.7	30.8	
9.5		54.6	10.1		9.3		19.5	16.3		9.5	41	4.9	34.4		7.3	0	8.6	40.1	K	9.4		24.5	57.8	
8.8	11	5.1	7.7	K	8.5		22.6	44.0		9.3		13.9	23.9		9.1		11.5	34.0	B	9.0		49.1	31.3	
9.5		20.5	59.8		9.1		44.2	8.1		9.3		23.5	7.5		8.4		13.4	52.3	K	9.0		51.6	35.2	K
9.5		27.5	9.0		9.5		59.4	52.5		9.0		35.7	5.5		9.5		32.1	56.2		9.2		57.5	33 3	B
8.6		41.6	59.4	K	9.4	29	2.4	14.3		9.5		36.6	18.3		9.5		56.8	8.5		9.4	17	4.4	15.8	
8.0		52.9	19.1	K	9.4		13.5	0.5		9.0		39.3	32.8		8.9	1	12.9	57.8	K	9.4	18	2.0	31.6	
9.5	12	27.4	8.1		8.9		41.5	47.4		9.5		45.0	58.3		9.4		36.6	28.7		9.4		11.2	12.7	
9.5	13	19.0	18.9		9.5		49.7	11.5		9.5	42	6.9	15.0		8.8	2	0.0	0.6	K	9.0	19	3.9	12.1	K
9.5		30.0	44.7		9.3		49.9	4.2	K	9.3		27.0	17.8		8.8		2.6	45.1		7.2		13.9	11.1	K
9.5		44.2	20.1	B	8.4		51.4	36.9	B	7.3		43.8	6.6	K	6.1		7.5	20.7	K	9.2		27.0	18.1	K
9.1		47.1	33.6		9.5	30	11.1	47.7		9.0	43	7.4	25.2	B	9.5		32.4	36.9		9.5		47.8	57.1	
9.3	14	12.2	55.5	K	8.9		16.6	3.2	K	9.1		8.3	27.0		8.5		38.5	46.9		9.5		55.8	11.7	
9.5		24.1	7.9		9.3		27.5	56.5		9.5		53.9	29.2		9.5		44.6	28.0		9.5	20	33.9	24.0	
9.3		55.4	43.0	B	9.2		27.5	45.4	B	9.5	44	3.6	42.0		9.5		56.9	54.9		9.4		47.8	42.0	
9.5		56.8	55.6		9.5		34.6	0.5		9.3		22.8	13.0		9.3	3	6.5	23.1		9.2		54.8	57.6	
9.5	15	12.7	12.9		9.4		35.5	37.8		9.3		23.8	32.3		9.5		40.6	11.6		7.0		58.2	29.5	L
9.3		50.5	40.1		9.2		38.2	40.4	K	8.5	45	23.5	5.6		9.5		49.9	42.7		9.4	21	11.4	56.2	
9.3	16	2.7	18.7	B	8.9		49.6	16.3		9.0		27.3	15.9	K	8.9		52.8	56.9	K	7.5		15.3	18.2	L
8.2		6.6	18.3	B	8.1	31	1.7	6.6	K	9.5		54.0	49.9		8.7		57.5	12.2	B	9.4		59.7	46.4	
8.0		13.5	16.0	K	9.3		7.9	36.3	B	9.2		59.5	5.9		9.5	4	30.7	4.4		9.3	22	27.7	4.2	
9.3		15.1	15.9	K	7.5		37.1	13.0	S	9.5	46	5.0	18.3		9.5		47.1	44.2		9.5		41.7	28.4	
8.9		28.0	39.2	K	6.9		47.6	51.2	K	9.4	47	2.2	45.9		9.5	5	30.0	52.1		9.3		48.3	8.3	
9.5	17	2.8	11.2		8.8		58.9	24.8		9.5		10.9	3.7		9.0		37.7	56.7		9.3		56.2	58.9	B
9.5		6.2	57.5		9.5	32	38.0	10 0		8.8		18.4	6.4		9.0		59.7	26.6		8.9	23	10.6	28.1	B
8.6		6.3	0.9		9.5		39.4	3.1		9.3		40.6	26.4	B	9.3	6	4.5	40.5	B	8.3		19.3	44.3	

501—560				561—620				621—680				681—740				741—800			
	2ᵘ		+38°		2ᵘ		+38°		2ᵘ—3ᵘ		+38°		3ᵘ		+38°		3ᵘ		+38°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	23	25.6	25.5		9.0	39 51.4	35.7		9.5	54 16.8	59.7		8.5	7 10.2	29.0	K	9.4	23 19.5	33.7	
7.5		43.5	54.4	B	9.3	51.5	4.6		9.3	17.9	19.2	B	7.8	13.1	5.1	K	9.5	24 25.1	48.3	
9.1	24	25.7	5.1	B	9.3	40 49.6	27.0		9.2	19.8	27.0		9.4	23.9	53.0	B	7.9	32.2	48.8	B
9.1		27.4	14.3	K	9.3	52.0	55.6		8.8	43.8	50.5		9.5	32.3	12.0		8.9	59.7	41.6	
9.5		55.6	51.0		9.4	52.0	17.0		9.4	55.7	22.5		9.5	33.7	52.8		9.0	25 9.1	16.4	
7.0	25	9.2	5.7	L	9.4	41 21.5	52.1		9.3	55 12.6	10.1		9.0	58.3	49.7	K	9.4	11.4	24.2	
8.8		16.1	54.8	K	9.5	42.7	36.7		9.4	25.2	46.0		9.3	8 6.1	44.9	R	7.5	16.2	18.9	L
8.5	26	15.3	32.5	K	9.0	42.7	19.8		9.0	27.5	38.2		9.3	7.5	56.6		8.7	21.0	57.7	
9.5		30.9	47.5		9.0	44.8	31.6	K	8.2	31.1	57.0	K	7.5	21.2	5.9	K	7.0	38.8	6.2	K
8.0		46.8	54.2	K	9.0	48.1	8.6		var	54.2	16.8	K	6.5	22.8	45.5	K	9.2	57.3	54.2	
9.5	27	13.7	20.9		9.3	59.0	34.8		9.4	56 17.5	34.4		9.2	28.7	27.8		8.5	59.3	40.5	B
9.1		19.8	24.3		9.5	42 4.3	18.9		9.1	55.7	58.0		8.9	9 27.3	11.7		9.4	26 6.5	50.5	
8.8		23.6	17.7		8.8	28.4	32.7	K	9.5	57 3.7	54.9		7.3	56.7	31.2	L	8.7	11.9	48.6	K
9.3		36.3	55.2		8.6	33.6	16.3		8.5	19.8	3.1	L	9.2	10 40.9	14.0		9.3	14.5	45.5	
6.2		54.6	6.0	K	9.0	43.3	19.3		8.5	24.7	48.0		9.5	44.7	21.1		9.3	18.3	22.1	
9.2	28	2.9	9.9	K	9.4	43 44.3	24.4		9.4	54.0	53.4		9.5	59.4	0.7		9.5	34.0	9.4	
8.9		11.0	12.0	K	9.3	44 14.6	56.9		9.5	58 3.2	54.8	B	9.5	11 15.7	50.3		9.3	38.8	33.4	
9.1		12.2	20.4		9.0	31.3	25.5		9.2	10.2	5.4		9.5	30.1	15.9	B	9.5	43.6	8.9	
9.1		13.8	5.9	B	9.2	48.0	40.2	B	8.6	13.7	39.4		7.8	30.2	22.1	K	9.5	50.5	12.4	B
9.0		22.0	38.1		9.1	50.5	54.3		8.1	15.7	30.9		9.1	42.7	30.9		9.4	50.7	16.4	
9.4		28.5	49.0		9.5	45 20.0	20.5		9.1	16.1	2.5		8.0	55.2	12.1	L	9.5	53.8	0.9	
9.5		44.4	8.8	B	9.0	39.7	37.8		9.4	49.7	20.5		9.4	12 10.1	52.5	B	9.0	27 0.4	42.1	K
7.8		53.9	19.0	K	9.5	41.6	57.9		9.2	59.6	10.1		9.2	10.5	26.5		9.5	19.2	41.4	
9.5	29	2.8	3.8		8.3	44.7	50.3		9.4	59 0.0	4.4	B	9.1	31.1	42.2	B	9.5	42.0	57.2	
9.4		20.8	32.2	B	9.3	45.9	21.3		8.9	10.2	36.1		9.5	34.7	5.2		9.5	28 9.7	57.1	
9.5		45.3	21.4		9.5	46 1.8	4.4		9.5	20.5	51.6		9.5	56.3	31.6	B	8.5	45.0	42.5	K
7.8		48.9	31.0	L	9.5	42.0	57.0		9.5	26.7	23.2		9.2	13 34.8	45.6	B	9.4	29 1.2	30.4	
9.0	30	10.0	54.0	R	9.4	53.7	41.8		9.5	49.8	2.3		9.0	35.2	14.1		9.4	7.1	35.9	
9.3		13.9	13.8		9.5	47 28.3	42.1		9.0	0 2.3	25.1	K	9.3	37.2	33.0		9.3	20.4	57.7	
9.3		37.0	55.5		8.7	32.3	6.9	K	8.1	9.4	56.3		9.1	39.5	55.3		9.2	24.4	4.1	
9.5		50.1	13.1		9.1	33.0	52.2		9.3	10.5	25.1		9.5	54.4	40.8		8.5	27.1	14.0	B
9.0		56.2	33.0		9.4	34.1	3.6		9.2	45.2	3.5		8.7	59.8	15.7	K	8.8	34.8	53.9	K
9.0	31	9.0	23.2		9.4	52.2	35.0		9.0	50.0	10.4		9.5	14 10.4	10.6		9.5	30 11.6	3.3	
9.4		18.0	25.2		8.0	53.0	28.8	K	9.5	51.2	22.5		9.3	36.2	24.8		9.5	38.7	58.9	
9.3		32.8	45.8	B	9.4	58.9	10.0	B	8.6	1 1.0	46.2	K	9.5	48.9	6.5		9.5	40.0	52.6	
8.8		53.6	26.7	K	9.5	48 27.3	18.4		9.4	3.9	58.3		9.3	50.1	13.1		8.9	49.6	42.8	B
9.5	32	3.1	8.7		9.2	35.8	2.3		9.1	2 39.0	36.4		8.8	15 47.7	33.7		9.4	51.5	7.4	
9.3		22.7	22.6		8.0	42.5	27.7	K	9.5	41.7	6.8		9.3	49.3	6.2		9.2	31 3.0	13.3	K
8.7		36.0	55.6	K	6.8	51.6	1.7	B	9.3	56.8	57.7		9.5	16 15.8	4.0		9.3	4.6	42.7	B
9.5		40.1	1.5		8.5	49 10.9	54.3	K	9.3	3 24.1	24.4		8.9	25.7	30.3		9.2	10.6	31.6	B
9.5		53.4	49.1		8.4	32.8	12.5		9.0	43.2	22.2		9.2	46.2	51.0		9.2	16.4	22.0	
8.5		54.0	40.3	R	9.4	42.0	10.6		8.2	48.0	26.1	K	8.0	51.7	33.8		7.5	18.4	38.8	K
9.3	33	55.7	50.7		9.3	44.8	15.5		9.5	54.7	50.6		9.4	17 6.2	20.0		9.0	27.2	28.5	B
8.0	34	8.7	44.8	B	9.1	50 48.6	56.8		9.3	4 0.7	44.0		9.0	51.2	46.1		9.1	32 5.1	34.2	
9.4		33.0	56.5		9.1	50.1	50.3		9.5	3.2	31.6		9.3	58.0	41.8		9.0	6.2	29.6	
9.5	35	36.6	59.6		8.8	51.5	36.6	B	8.4	4.7	25.1	K	8.5	18 2.2	5.0	K	8.8	17.5	56.7	K
9.4		49.0	58.1	B	9.0	59.8	51.2		8.1	14.6	36.4	K	9.2	39.7	25.8		9.3	22.4	40.1	
9.3	36	0.0	31.6		8.9	51 6.4	53.6		9.0	27.2	23.7		9.5	50.7	20.5		8.0	30.1	21.8	L
9.5		18.2	5.9		8.5	15.0	59.9	K	9.4	51.1	53.6		9.0	59.0	43.6		9.5	41.5	4.8	
8.8	37	8.2	6.1		9.5	36.5	46.2		9.5	5 6.5	29.9		9.3	19 5.2	14.2		8.8	49.4	58.0	K
8.5		40.0	29.6	L	8.0	37.0	41.1	K	9.5	9.2	18.6		8.2	14.3	6.8	K	9.4	33 10.3	47.7	B
8.6		41.8	43.2	L	8.6	38.2	57.0		9.3	44.4	20.0		9.1	20 15.2	15.3		9.0	18.5	4.8	K
9.3		56.9	50.2	B	9.3	52 10.0	24.9	B	9.5	6 2.2	13.6		8.3	47.2	44.8	K	9.5	31.4	57.6	
9.5	38	0.3	25.2		9.4	27.5	57.6	B	9.5	6.5	35.9		9.2	52.3	33.8		9.5	34 20.0	5.3	
9.3		10.7	5.6		9.5	33.9	35.7		9.1	7.8	58.9		9.4	56.5	53.4		9.3	24.8	56.3	
9.3		25.2	46.0	B	8.5	37.0	59.2	K	9.4	11.3	58.3		9.5	21 21.3	6.4		9.4	37.9	51.2	
8.7		39.6	54.2	K	6.8	39.8	19.8	K	9.2	13.1	7.8	B	7.0	39.7	39.2		9.4	49.4	48.2	
9.2		40.5	42.4	B	9.5	53 2.6	2.2		9.5	14.2	44.4		9.5	40.8	59.5		9.4	35 3.9	58.0	
9.4	39	3.7	40.4		9.4	17.8	7.9		9.4	23.2	2.3		9.4	22 18.4	14.1	B	9.0	5.5	31.6	
9.5		3.9	6.9	B	9.2	38.1	1.4		9.4	7 2.2	42.3		9.5	23 18.0	40.1		8.3	9.1	41.1	

801—860					861—920					921—980					981—1040					1041—1100				
	3ᵘ—4ᵘ		+38°			4ᵘ		+38°			4ᵘ		+38°			4ᵘ		+38°			4ᵘ—5ᵘ		+38°	
m					m					m					m					m				
9.2	35	50.5	22.6		6.7	4	25.6	5.8	K	7.7	28	51.5	8.7	K	9.5	47	19.3	23.4		7.1	59	40.6	29.5	B
9.0	36	4.4	41.1	K	8.9		55.7	9.7	K	8.6	29	0.0	51.4	K	9.2		32.0	4.4		9.4		48.6	32.6	
6.5		5.8	12.4	K	9.0	5	22.1	27.0		9.5	30	2.4	5.2		9.5		42.5	42.9		9.3		49.8	30.8	
9.5		51.9	3.3		9.2		59.8	37.3		8.3	31	49.2	27.8		9.3	48	2.1	36.3		9.5	0	5.5	19.0	
8.8	37	37.3	43.4	K	9.5	6	10.4	9.5		9.5	32	10.9	4.4		8.3		27.3	29.6		8.4		8.8	10.6	
9.1		37.4	41.7	K	9.0		12.7	54.9		8.5		49.3	5.6	K	8.9	49	2.8	23.2		9.5		24.3	5.2	
9.5		58.8	42.5		9.5	7	0.6	29 3		7.0	33	0.2	8.4	K	9.0		4.9	41.0		9.1		25.6	58.8	
8.3	38	52.7	55.6	K	9.5		5.4	55.1		9.4		7.1	46.7		8.8		28.2	19.1	B	8.9		27.2	9.9	K
9.5	39	18.1	36.4		9.4	9	13.6	45.8		9.5		9.0	11.1		9.3		35.7	53.9		9.1		47.3	59.3	
9.1		53.9	38.8		9.4		14.1	50.4		9.5		15.9	54.5		8.8		47.3	59.0		9.5	1	4.1	33.4	
8.8		59.5	30.9		9.4		26.5	28.5		9.3		42.4	26.1		9.3	50	2.5	7.5		9.1		19.5	56.7	
9.1	40	4.8	43.8		8.8		44.0	54.3		9.2	34	20.7	41.3	B	9.5		5.7	26.7		9.5		23.4	16.0	
9.4	41	18.8	55.6	B	8.0	10	2.0	56.8	K	8.3		41.7	26.7	K	8.4		36.3	35.1	K	9.5		24.9	21.5	
9.1		57.0	16.4	B	9.5		25.0	48.3		9.2	35	20.4	3.6		9.0		49.8	59.4		9.5		35.8	16.0	
8.5	42	47.5	22.8	K	8.5		25.0	0.4	K	8.8		46.8	50.9		9.4		52.6	16.0		9.2		44.7	35.3	
8.5	43	6.8	5.7		7.4	11	12.3	13.0	L	8.5	36	25.5	57.5	K	9.1	51	9.3	44.6		9.4	2	3.0	12.1	
9.0		36.4	30.3		9.0		45.3	36.5	K	9.3	37	9.6	29.3		8.7		9.8	11.4		9.5		5.3	49.1	
9.4	44	15.3	36.0		9.4	12	52.5	40.4	B	9.5		43.4	28.3		9.1		16.3	6.7		9.2		10.1	56.2	
8.0		30.0	6.8	K	9.5	13	10.1	16.0		9.3		46.1	47.0		9.2		18.2	0.1		9.2		23.9	7.2	
8.3		31.1	5.5	B	9.4		39.0	46.6		9.0	38	1.0	58.1	K	8.9		21.5	6.7		8.4		30.1	29.4	
9.5	47	3.3	57.7		9.5		42.9	3.8		9.3		59.8	43.2		9.3		25.0	36.3		9.1		33.8	5.4	
8.9		9.6	17.2		9.2		56.9	53.8		8.6	39	4.3	57.6	K	9.3		35.7	52.6	B	9.5		34.8	15.5	
8.5		12.9	2.0	K	8.5		57.4	31.2	K	9.4		23.7	58.1		9.2		45.3	5.4		5.2	3	31.3	18.3	K
8.8		14.6	24.1		9.5	14	8.5	34.0		8.7		36.8	58.7	K	7.8		48.4	33.8	L	9.3		39.4	47.7	
9.5		37.5	7.5		9.0		12.0	31.2		9.5		43.4	3.8		8.7		55.3	6.7		8.5		46.7	50.2	
9.3	48	20.4	15.7		7.8	15	32.4	42.5	K	9.2		57.8	40.0		9.0	52	25.1	45.2		9.1		48.3	8.9	
6.5		51.4	24.6	K	9.5		42.6	4.4		9.2	40	23.0	28.7		9.4		28.2	44.5		9.5	4	1.3	42.5	
9.4	49	59.8	30.3		8.6		53.6	18.9	B	9.4		46.9	43.5		9.5		34.4	11.2		9.4		16.5	42.0	
6.8	50	3.1	23.4	G	9.5		56.2	23.5		9.5	41	21.3	22.8		9.5	53	12.9	13.0		9.5		17.6	18.3	
9.4		19.1	38.8		9.1	16	23.1	52.9		9.5		35.2	0.9		9.5		24.5	51.3		9.4		33.5	1.9	
9.0		24.8	5.0		9.5		48.0	24.3		9.5		55.5	20.7		9.4		41.3	28.2		8.6		39.3	3.2	K
7.3	51	57.3	14.7	K	9.3	17	40.7	57.6		9.3	42	21.3	19.1		8.2	54	8.6	39.4	K	8.9		46.4	4.2	K
9.4	52	3.2	44.7	B	9.4		53.5	40.2		9.5		27.7	12.3	B	9.5		28.4	24.2		9.5		46.5	10.6	
7.3		48.8	40.6	K	9.5	18	7.0	13.1		9.5		28.5	52.7		9.2	55	9.8	8.6		9.5	5	14.1	33.8	
8.9	53	32.1	33.5		9.5		34.4	12.7		8.8		43.3	15.1	K	9.5		45.3	8.1		9.4		16.0	54.1	
7.4	54	44.3	23.3	K	8.4		37.6	6.5	K	9.3		56.9	21.3		9.5		49.7	21.9		9.3		29.3	50.2	
9.0		57.8	27.9		9.5	19	24.8	36.0	B	9.5	43	8.3	50.5		9.5		50.9	43.4		9.3		29.3	49.7	
8.0	55	4.1	29.9	K	9.1		51.4	44.9		9.5		10.1	3.0		9.5	56	17.5	57.5		9.2		35.6	41.0	
9.3		50.9	13.0		8.0		54.5	27.5	K	9.5		17.5	10.9		8.4		26.7	30.8	K	9.0		41.7	21.8	
9.4	56	58.2	51.9		9.5	20	23.8	21.9		9.4		19.0	10.1	B	7.7		39.3	19.2	L	9.0		43.5	11.1	
8.3	57	28.1	3.8	K	9.0		24.4	39.7		9.5		24.4	27.0		9.5		45.8	22.9		9.3	6	3.6	2.2	
9.1	58	3.2	51.4		9.5		27.7	45.1		9.2		49.4	45.9		9.5		45.8	36.7		9.5		4.3	54.1	
9.1		21.8	21.7		8.8		43.2	53.9		8.7		55.3	31.4	K	9.3		50.4	54.9		9.2		5.5	13.1	
9.5	59	8.2	17.4	B	9.0		52.4	33.3		9.5		57.6	1.1	B	9.0	57	29.7	37.9		9.0		20.7	34.4	
8.5		16.4	54.7		8.3	21	39.5	23.6	K	9.1	44	2.5	47.7		9.0		31.0	38.1		9.5		34.9	18.3	
9.2		49.4	58.7		9.5	22	9.0	8.0		9.5		8.6	34.0		9.5		31.7	45.0		9.5		37.4	36.6	
9.5	0	35.3	33.9		8.0		35.7	29.1	K	9.2		27.3	54.9		9.4		38.8	59.8		8.5		41.3	52.6	S
6.8		38.5	51.8	K	9.5		58.8	56.4		9.2		37.4	30.5		9.5		47.0	30.4		9.1		47.4	27.0	K
9.5		57.0	55.1		9.5	23	53.7	16.0		8.9		49.0	47.5	K	9.2		51.7	46.1		9.0		48.3	2.5	
7.5		57.7	6.1	L	9.5		55.8	56.5		9.4		59.0	44.5		9.5	58	1.9	23.4		9.3		56.0	51.7	
9.3	1	45.9	48.4		9.2	24	53.8	5.5		9.1		59.3	10.1		9.5		14.8	51.1		9.5		57.5	29.0	
9.5		50.2	7.5		8.7	25	2.0	51.4	K	8.8	45	0.6	31.6		8.5		18.7	50.4		9.5	7	0.0	10.9	
8.8		55.7	51.9	B	9.3		21.9	32.1		9.0		25.3	31.8		8.4		23.3	26.7		9.4		7.3	1.3	
9.5	2	50.5	59.3		9.5		23.4	18.1		9.5		28.8	33.5		9.4		34.5	41.7		9.3		13.6	8.0	
9.1		53.0	25.1		8.1		25.6	34.9	L	9.5		39.5	23.1		9.2	59	9.1	48.5		9.5		14.1	4.5	
9.4	3	7.4	34.4		8.8		29.8	38.1		9.5		51.3	52.5		9.5		14.4	17.9		9.3		16.9	37.6	
9.2		10.5	13.7		8.5		45.0	9.8	B	8.7	46	9.3	26.9	L	9.5		21.4	3.3		9.5		37.1	0.5	
9.4		30.3	22.5		9.5	26	0.2	51.7		9.5		30.0	53.0		9.5		27.9	50.3		9.2		50.5	10.7	
9.0		47.5	9.3		8.9		30.0	51.3		8.7		39.4	26.9	L	9.5		32.8	9.9		9.4		54.7	32.9	
9.1	4	17.2	17.9		9.5	28	23.1	45.8		8.7	47	5.9	41.2	K	8.5		32.9	49.4		9.5		55.6	15.4	

m	5ᵘ	+38°	
	1101—1160		
9.4	8′ 10.3	10.7	
9.5	10.3	7.5	
9.5	11.4	55.8	
9.5	13.4	26.7	
8.8	18.2	49.6	K
9.4	30.5	50.4	
9.1	39.3	57.0	
8.5	42.2	32.9	
8.9	55.0	51.0	
9.5	59.1	17.5	
9.3	9 2.8	51.1	
8.7	5.4	44.0	
8.4	10.8	55.8	K
9.5	13.5	54.1	
9.2	35.1	1.0	
9.3	47.0	11.0	
9.4	54.3	45.0	
9.2	57.8	6.0	
9.4	10 0.0	59.7	
9.2	10.9	41.2	
9.5	19.5	48.9	
9.4	20.3	39.5	
9.2	33.1	18.5	
9.2	43.3	21.5	
9.2	46.3	20.8	
8.9	48.0	6.5	
9.3	55.9	44.8	
9.5	11 31.2	38.2	
9.5	12 3.7	15.9	
9.4	7.0	5.8	
9.0	11.9	51.2	
9.3	27.9	50.7	
9.4	32.2	48.0	
9.5	47.4	43.8	
9.5	13 8.1	59.5	
9.5	12.9	56.1	
8.9	24.2	54.1	
9.5	27.1	37.5	
9.4	46.3	53.6	
9.5	49.5	10.7	
9.5	54.6	9.6	
8.9	57.3	14.8	
9.5	14 3.6	56.6	
8.3	11.8	25.4	
9.3	18.0	17.7	
9.0	38.9	47.7	
9.2	41.4	2.3	
9.2	44.5	12.2	
9.5	50.3	43.8	
8.5	58.9	14.4	
9.0	15 8.8	59.9	K
9.5	11.7	50.2	
9.2	12.4	54.2	
9.4	28.1	41.9	
8.7	51.3	25.0	
9.1	16 5.3	12.6	
8.8	10.0	41.7	
9.4	30.0	21.0	
8.2	45.5	49.3	K
9.1	17 15.3	27.1	

m	5ᵘ	+38°	
	1161—1220		
9.4	17′ 28.0	51.8	
9.4	43.5	50.9	
9.5	54.4	25.7	
9.5	18 5.3	3.8	
8.3	23.8	10.4	
9.5	43.5	59.5	
9.5	52.9	29.6	
9.5	19 0.1	55.3	
9.5	1.2	2.0	
8.7	13.4	40.0	
9.2	18.8	3.0	
9.1	18.9	27.6	
9.0	21.3	34.3	
9.5	28.7	56.4	
8.9	31.4	31.8	
9.0	31.6	40.9	
9.3	34.8	6.1	
8.8	41.2	47.2	
9.5	52.3	23.2	
9.5	52.4	20.2	
8.9	54.0	53.3	
9.0	20 15.2	16.7	K
8.9	16.0	11.3	K
9.2	21.3	10.6	
9.5	26.7	18.5	
9.5	48.4	2.4	
9.2	53.8	34.2	
9.1	59.1	20.2	
8.7	21 6.3	47.1	
8.8	8.4	26.2	
9.5	11.5	44.0	
9.5	22.3	23.5	
7.6	29.8	12.4	K
9.5	39.4	35.9	
9.3	50.8	31.6	
9.5	22 16.3	13.0	
9.5	22.2	50.4	
9.5	22.2	47.0	
9.5	30.0	16.0	
9.5	42.4	24.4	
9.4	23 0.0	23.9	
9.5	22.9	23.2	
9.5	25.9	12.1	
8.0	26.8	40.3	K
8.2	44.8	46.2	K
9.3	45.9	50.9	
9.5	55.3	36.3	
9.4	24 9.7	7.2	
9.5	14.2	3.0	
9.2	31.3	20.5	
9.0	37.5	22.7	
9.5	25 5.1	19.7	
9.4	36.3	10.3	
8.6	44.7	14.0	
9.5	50.3	20.7	
8.1	55.4	55.5	K
8.8	26 16.7	6.8	
8.1	19.3	55.6	K
9.4	27.2	57.1	
9.2	29.4	43.9	

m	5ᵘ	+38°	
	1221—1280		
9.2	26′ 41.1	48.8	
8.7	41.5	28.8	K
9.5	46.9	47.6	
9.5	54.9	23.1	
9.2	55.8	44.7	
8.0	57.5	13.8	G
9.2	27 11.8	58.6	
8.5	12.9	54.3	K
9.5	31.7	9.4	
9.5	42.0	36.3	
9.2	50.6	27.9	
9.2	56.7	17.3	
9.5	28 3.5	8.1	
9.5	7.3	5.7	
8.4	17.3	30.6	
9.5	42.0	20.5	
9.4	45.8	6.4	
9.3	29 11.4	45.9	
8.3	16.1	27.4	G
9.3	18.5	38.5	
8.0	27.2	24.8	G
9.1	28.0	15.0	
9.5	32.1	1.0	
9.5	40.4	12.3	
9.4	49.0	38.5	
9.3	30 33.6	21.0	
8.4	58.1	57.9	
7.7	31 1.1	25.9	B
8.0	24.0	49.2	K
8.0	35.3	6.2	K
8.4	39.3	57.9	K
9.5	46.4	45.9	
9.3	57.1	26.4	
9.5	32 4.5	56.2	
9.5	20.8	45.0	
9.5	20.8	29.6	
9.4	22.5	26.8	
7.7	22.8	7.4	G
9.1	24.6	59.8	K
9.5	29.9	34.8	
7.4	50.7	7.3	G
9.5	51.5	6.9	
9.3	33 9.4	14.9	
9.5	19.3	36.9	
9.4	32.0	5.3	
8.3	33.3	16 3	
8.6	34.1	0.3	K
9.5	54.5	16.3	
8.2	34 6.4	10.6	K
9.5	8.6	28.6	
9.5	8.9	35.5	
9.2	17.3	11.0	K
9.5	24.7	48.2	
9.2	34.6	2.3	
9.5	50.0	54.1	
9.5	52.1	17.5	
7.5	59.0	25.4	K
8.8	35 5.1	2.5	
9.4	11.4	43.2	
9.0	21.0	54.1	K

m	5ᵘ	+38°	
	1281—1340		
9.5	35′ 33.3	13.5	
9.3	52.5	17.0	
8.8	36 19.6	4.4	
9.5	23.7	32.6	
9.4	46.3	53.4	
8.9	37 4.3	9.7	
8.8	6.4	1.5	K
9.3	14.9	7.7	
8.4	18.8	55.7	K
9.3	25.1	33.7	
8.7	33.0	36.8	
9.0	37.8	6.7	K
9.5	49.7	58.6	
8.8	38 14.4	48.5	K
9.4	19.4	17.2	
9.5	24.8	46.6	
8.7	30.3	24.4	
8.8	45.5	55.8	
9.5	55.0	12.4	
9.0	39 3.9	51.4	
8.5	11.8	18.1	K
9.5	14.3	25.3	
7.0	21.1	41.0	K
9.5	40.0	39.5	
7.9	41.3	38.3	K
9.5	47.8	40.2	
9.5	55.7	54.2	
9.5	40 7.0	5.5	
9.5	12.9	16.9	
9.5	45.3	10.5	
9.1	41 6.4	35.7	
9.5	23.9	50.9	
9.2	24.8	11.4	
9.5	42.9	13.7	
8.5	47.7	43.9	L
9.0	55.5	40.1	
9.5	42 10.4	6.4	
7.2	14.6	31.1	K
9.3	30.2	23.2	
9.5	43 10.3	11.6	
8.6	19.3	15.0	
9.5	30.1	54.0	
9.1	43.9	48.9	
9.1	44.5	39.3	
8.5	44 22.8	33.6	K
8.5	23.3	33.1	K
9.4	26.8	51.7	
9.4	56.3	34.2	
9.3	46 0.1	57.3	
9.3	17.5	20.5	
8.1	31.1	25.5	B
9.5	35.4	45.5	
7.8	47.0	33.0	
9.5	57.2	4.7	
7.3	58.3	14.8	L
9.1	47 16.1	49.8	
7.3	28.2	36.3	L
9.5	30.3	18.1	
9.0	48 0.0	12.4	
9.2	18.6	2.4	

m	5ᵘ—6ᵘ	+38°	
	1341—1400		
7.0	48′ 32.3	51.9	K
9.5	44.4	11.1	
7.8	49 29.3	35.8	
9.5	50 3.3	28.2	
9.5	3.8	47.5	
9.5	12.9	12.9	
8.7	21.3	32.8	K
9.5	26.0	47.7	
9.5	28.2	43.7	
8.5	57.8	4.4	K
9.5	51 0.4	34.4	
9.5	2.6	53.3	
9.4	5.1	5.7	
9.4	32.6	2.4	
9.2	49.8	36.8	
8.1	52 0.9	26.7	K
7.3	4.9	42.7	K
9.5	25.4	57.8	
9.3	58.1	44.9	
9.5	53 6.2	56.6	
9.5	18.6	50.8	
9.5	33.0	36.8	
9.4	54 19.5	36.7	
9.4	21.3	20.2	
9.4	32.2	37.5	
7.0	39.5	34.8	L
9.4	49.6	51.0	
8.8	55 18.1	23.9	
9.4	24.0	30.9	
9.3	31.0	49.9	
9.5	52.7	23.9	
9.1	56.5	49.1	
9.4	56 11.3	43.3	B
9.5	11.5	2.9	
9.3	26.4	55.5	
9.0	31.5	36.3	
6.0	36.5	29.9	K
9.3	39.6	17.0	
9.2	57 3.5	39.5	
9.5	4.0	21.1	
9.5	11.5	31.8	
7.0	33.5	5.4	L
9.4	48.0	8.4	B
9.5	50.1	0.2	
9.5	58 1.4	31.1	
9.5	28.9	44.9	
9.5	44.7	9.9	
9.5	59 0.5	7.6	
9.5	3.0	54.6	
9.0	32.5	17.3	B
7.5	35.5	19.0	K
9.5	38.9	58.0	
9.2	55.4	55.7	
9.1	0 3.5	32.6	
8.9	11.5	9.6	
9.0	26.4	56.5	
9.3	32.5	52.5	
9.4	43.7	40.0	
9.5	1 20.5	36.0	
9.5	21.5	46.4	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	6ᵘ	+38°			6ᵘ	+38°			6ᵘ	+38°			6ᵘ	+38°			6ᵘ—7ᵘ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	1 27.8	59.5		9.2	11 6.3	36.6	K	9.3	24 18.3	44.0		9.2	33 20.6	40.0		6.6	45 40.6	5.4	K
9.0	29.6	22.7		9.4	27.0	36.4		9.5	19.8	13.4		9.4	47.7	57.6		9.5	47.5	27.2	
9.2	39.4	33.3		8.9	32.5	34.6	K	7.0	22.8	10.4	K	8.8	53.1	19.8	R	9.4	56.2	40.0	
9.2	43.2	57.6		9.4	32.8	30.9		9.3	25.3	11.1	K	9.4	57.0	30.9		9.5	46 7.0	33.8	
9.4	48.6	4.4		9.4	34.4	36.2		9.3	26.2	10.4	B	9.1	34 10.3	30.6		9.0	15.3	43.2	K
9.4	51.0	56.8		9.4	50.9	19.6	B	9.3	33.0	20.0		9.5	16.0	13.8		9.5	20.7	37.0	
9.0	2 19.5	48.1	K	9.5	12 9.6	33.3		9.5	34.5	32.8		9.4	22.1	7.2		9.3	43.7	43.2	
9.4	48.0	36.8		9.5	11.5	47.4		7.5	43.2	38.3	K	9.5	28.3	31.9		9.3	47.2	37.1	
9.4	55.6	23.4	B	9.0	15.8	49.6		9.0	44.8	57.8		9.0	41.7	55.1	B	9.4	55.0	10.9	
8.6	3 21.5	11.6		9.5	36.0	25.6		8.8	25 3.3	51.9	K	8.7	46.2	56.1	B	9.1	47 36.8	57.8	
8.6	23.4	25.2		9.1	38.5	32.8	K	9.5	4.0	28.2		8.7	46.8	52.8		9.3	42.3	17.3	
9.5	36.8	45.9		9.3	41.0	44.9		9.2	23.9	5.7		9.5	56.5	29.7		9.5	46.0	20.3	
9.3	39.3	20.2		9.3	13 9.5	9.6		9.5	29.4	57.6		9.5	35 14.5	57.6		9.2	48 16.2	44.5	
9.1	41.0	39.7		9.5	11.2	33.0		9.4	39.8	30.6		9.4	25.3	22.6		8.0	30.8	10.1	K
9.3	56.3	9.4		7.8	25.0	5.9	L	9.5	26 13.5	35.5		7.5	31.3	31.5	K	9.0	42.3	12.1	K
9.3	4 5.1	42.9		9.5	26.1	23.4		9.5	14.7	48.6		9.5	36.6	11.8		6.5	49 11.0	14.8	K
9.0	18.5	42.4		9.3	33.2	57.4		8.1	20.9	6.4	B	9.3	39.8	6.8	B	9.2	17.5	33.4	
8.4	26.0	37.3	K	9.5	47.6	16.8		9.5	23.1	7.9		9.0	55.3	30.6	K	9.3	50 5.3	5.2	
8.8	28.2	25.4		9.5	49.0	47.4		6.3	34.8	33.4	L	9.5	36 29.0	13.6		9.1	7.4	39.8	
9.4	30.0	53.8		9.4	14 8.5	8.4		8.1	43.8	54.4	K	9.5	58.3	46.2		9.2	21.3	32.1	
9.1	33.5	34.2		9.2	12.0	57.5	B	9.2	54.5	49.3		8.7	37 9.0	10.6		9.5	51 3.3	42.8	
9.2	35.5	18.2		9.3	13.5	47.4		8.8	59.6	20.0		9.0	19.3	59.8		9.2	12.8	47.1	
9.4	39.5	27.8		9.5	24.0	20.0		9.1	27 0.2	57.3		8.5	20.8	23.4		9.2	28.0	42.8	B
9.3	49.4	34.6	B	7.7	29.6	38.0	K	9.2	3.6	53.5		9.1	23.1	42.5		9.5	48.5	33.2	
9.5	5 4.7	8.1		9.4	35.3	40.5		9.3	8.5	39.1	B	7.3	26.3	41.0	L	9.4	52 1.4	40.8	
9.5	8.3	53.0		8.8	51.5	10.3		8.3	18.3	32.4	G	9.5	38 3.2	16.1		9.5	41.6	18.7	
9.5	9.5	0.7		9.5	15 20.5	42.4		9.4	34.3	3.3		9.4	14.5	11.5		9.5	53 4.5	22.3	
9.3	17.2	36.5		9.4	21.2	59.1		9.5	36.2	22.3		9.4	21.4	11.9		9.1	6.7	28.0	
9.5	37.1	32.6		9.5	23.3	24.2		9.1	39.0	24.3		9.5	48.9	49.7		9.1	9.3	49.7	
9.3	58.5	31.4		7.5	46.4	7.4	L	9.5	42.3	37.2		8.7	50.3	11.2	R	8.9	11.3	21.3	K
9.3	59.4	39.5		9.3	17 33.8	55.8		9.1	28 16.1	10.6		8.6	39 4.1	25.5	B	9.4	16.8	32.8	
8.4	6 7.0	53.1		9.3	45.7	10.1		9.5	16.1	12.9		9.2	8.5	23.5		9.4	33.2	16.1	
8.6	9.8	10.8		9.2	56.3	45.0		9.5	52.0	57.5		8.8	38.4	40.7		9.0	50.8	28.7	K
9.5	41.5	42.0		9.3	58.3	54.8		9.1	56.3	31.4		8.0	41.6	28.4		9.5	54 15.8	53.6	
9.4	7 0.2	12.8		9.5	58.3	30.1		9.0	59.3	37.6		9.3	44.1	26.9		9.5	44.0	33.3	
9.4	3.5	14.8		8.3	18 17.8	23.0	K	9.4	29 7.3	1.8		9.4	44.3	4.1	B	9.5	55 9.0	22.2	
9.5	27.3	2.9		9.5	30.4	17.5		9.0	7.8	7.7		7.4	40 8.2	59.3	K	9.0	9.0	51.1	
9.5	33.5	42.0		9.5	30.9	7.9		9.2	27.0	27.5		9.5	24.6	44.0		9.5	20.5	11.8	
9.0	47.5	46.9		9.4	51.6	45.0		9.3	49.8	35.6	B	9.1	36.5	48.3		9.0	22.9	53.9	
9.0	48.5	13.1		9.5	19 10.0	55.3		9.1	52.3	49.1		8.3	40.3	21.0	R	9.5	52.2	40.2	
9.4	54.6	9.6		9.5	19.2	36.6		9.2	54.0	55.3		9.2	41 15.3	39.8		8.3	57.3	48.6	K
9.4	8 8.5	20.2		9.4	43.4	58.6		9.4	56.5	0.5		9.5	25.4	10.0		9.3	56 12.0	48.6	
9.5	9.0	2.7		9.4	20 9.6	8.7		9.1	30 6.8	16.3	K	8.9	27.3	45.4	R	9.0	17.5	27.9	
8.7	15.5	41.7		9.5	25.3	37.8		9.4	11.0	21.7		9.4	31.6	30.9		9.4	27.6	11.6	
8.5	28.0	22.4	K	9.5	47.5	37.3		9.5	45.5	29.6		9.1	37.2	12.9		9.3	43.3	53.6	
8.7	34.5	39.7		9.5	48.4	16.1		9.3	31 5.1	22.5		9.1	48.0	44.7	R	8.9	47.3	14.3	
7.8	40.5	16.7	K	9.5	59.3	0.3		9.4	8.0	33.4		9.4	51.9	47.5		8.3	57 4.0	7.4	L
9.3	44.5	45.6		9.5	21 7.7	21.5		9.5	12.1	37.3		9.1	52.5	10.2		9.5	4.8	43.7	
8.7	47.7	11.8	K	9.3	30.3	50.7		9.2	21.3	0.7		9.5	58.4	26.5		9.5	23.3	33.4	
8.6	56.3	19.2	K	9.5	33.1	3.0		8.7	22.3	33.3	K	9.5	42 23.2	26.2		9.3	36.5	40.0	
9.2	9 0.2	35.0		9.5	48.3	52.9		9.5	27.4	50.6		9.5	28.0	14.4		9.5	58 11.3	10.2	
7.0	43.7	29.4	K	9.4	49.1	57.9		9.5	37.3	54.6		9.3	31.7	48.8		9.4	16.5	43.5	B
9.5	44.4	33.6		9.4	22 4.3	47.2		8.7	52.9	49.6	B	8.5	37.3	35.3	K	7.5	59 19.3	50.0	K
9.5	58.5	7.1		9.3	13.0	1.7		9.0	32 3.2	9.6		9.5	43 2.4	17.5		9.0	24.0	10.1	
9.3	10 3.3	32.8		9.1	57.2	18.4		9.5	7.1	49.4	B	9.4	16.3	45.4	B	9.3	31.3	8.2	
9.5	3.6	24.4		9.5	23 4.3	22.2		9.5	19.9	18.0		6.2	16.3	37.2	K	9.0	38.0	17.8	
9.3	11.5	6.6		9.2	6.5	53.9		9.0	23.0	14.6		7.7	48.1	28.7	L	8.5	44.3	42.0	K
9.5	24.4	5.2		9.3	23.5	48.2		9.0	49.3	32.5		6.3	44 1.8	40.8	K	9.2	58.2	38.2	B
9.4	26.7	53.6	B	9.5	51.0	44.7		9.4	33 10.0	14.0		9.5	5.0	22.5		8.4	0 21.3	21.3	
9.5	50.3	5.4		9.4	24 10.0	53.6		9.5	14.2	53.0		9.3	44.3	14.4		8.7	23.3	10.2	

1701—1760					1761—1820					1821—1880					1881—1940					1941—2000				
	7ᵘ		+38°			7ᵘ		+38°			7ᵘ—8ᵘ		+38°			8ᵘ		+38°			8ᵘ		+38°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
8.8	0	27.8	26.7		9.3	18	1.1	39.7		9.5	40	49.7	2.8		8.3	4	37.9	11.8	K	9.5	31	25.8	22.5	
9.5		59.4	44.0	B	9.3		18.0	57.6		8.8		57.2	52.9		8.4		39.3	22.9	K	9.2		37.3	34.6	
9.3	1	7.3	34.0		9.4		30.5	3.2		8.8	41	2.2	57.0	K	9.5		53.0	1.2		8.0	32	43.8	35.2	K
7.9		18.5	25.6	L	9.5		34.9	34.5		9.5		19.6	35.9		9.0		53.5	54.1	K	9.5	33	4.5	15.3	
8.7		28.3	42.2		9.4		47.1	32.2		9.4		20.4	11.0		8.9	5	40.4	20.9	K	9.5	34	14.3	25.5	
9.5		45.7	4.3		9.3		54.6	37.9	B	9.0	42	4.3	9.9		9.3		56.8	35.1		9.4		31.6	36.3	
9.4	2	8.4	0.4		9.3	19	9.3	30.1		9.4		11.8	17.9		9.5	6	8.1	29.2		9.2		37.4	50.2	S
9.1		12.2	31.8	K	9.5		25.8	38.1		9.3		49.5	18.5		9.4		16.1	12.8		9.1	35	4.5	47.0	
8.7		14.2	44.3		9.1		33.9	10.7	B	9.5	43	15.0	32.7		8.5		17.9	55.6	K	9.4		20.0	14.2	
9.2		44.6	32.1	K	9.3		34.0	56.4		9.1		29.2	5.3		9.5	7	8.6	18.9		8.4		31.3	13.0	B
9.5	3	40.6	41.3		7.7	20	8.2	45.0	G	9.5		47.5	42.0		8.1	8	14.9	18.7	B	9.5		33.8	4.2	
8.0		49.8	20.6	G	8.7		22.6	46.7		8.1	44	8.5	54.4	K	9.5		30.2	18.1		9.2	36	4.5	8.8	
9.2	4	18.1	0.7	B	6.8		23.0	28.9	G	9.4		17.8	3.3		9.5		48.6	8.5		8.2		7.3	52.5	K
9.3		31.8	22.7		9.3	21	14.8	29.5		8.3		58.1	28.5		7.9	9	11.6	10.8	K	9.2		27.5	14.2	K
9.4	5	24.3	40.5		8.8	22	7.4	48.5	K	8.4	45	14.4	12.6		8.5		37.0	59.7	B	9.0		29.2	51.8	
9.3		41.5	24.3		9.5		19.9	22.6		8.0		37.0	35.1	B	9.2	10	31.5	0.9	K	9.1		48.8	44.3	
9.5		55.5	41.7		9.3		36.3	51.2		9.5		40.0	39.9		8.4	11	1.5	47.2	K	9.3		49.9	15.4	
9.5	6	35.2	52.1	B	9.5		46.8	2.7		9.4		56.2	28.8	B	9.4		41.0	25.2		7.1	37	28.8	34.3	K
9.2		39.4	17.2		9.0	23	14.2	25.9		8.6	46	16.0	25.9		8.8		45.3	52.8	K	8.7		43.4	47.0	
8.6		56.7	58.6	K	9.5		25.7	37.5		9.4	47	1.0	19.1		9.5	12	8.4	54.7		9.3	39	39.7	14.5	
8.8	7	0.0	20.2	R	9.1		54.8	0.9		9.5	48	36.3	30.1		9.5		46.3	40.9		6.8		39.8	53.2	K
8.9		3.2	59.0	K	9.4	24	13.6	1.5		9.5	49	23.8	14.1		9.1	13	32.0	55.2	K	9.5	40	29.0	43.3	
9.2		6.0	58.0	K	9.4		22.7	21.9	B	9.5		26.4	55.9		9.4		51.0	10.2		8.8		30.9	26.0	
9.5		44.8	59.1		9.4		29.5	16.7		9.3		35.1	32.8		9.2	14	17.8	24.9	R	9.5	41	4.5	42.9	
9.2		49.0	38.5		9.2		30.1	26.6		9.2		36.1	40.4	B	8.5		22.0	54.8	K	9.5		5.4	3.8	
8.0	8	8.6	37.1	B	8.8		33.8	39.1	K	9.4		44.2	2.7		9.4		31.6	30.7		9.2		30.3	8.1	B
9.4		14.2	50.0		9.4	25	6.6	38.8	B	9.3		49.7	44.1		8.7		45.5	4.8		8.5		31.1	21.0	B
8.7		29.0	59.1	K	9.5		44.7	31.3		9.2	50	31.2	5.6		8.2	16	53.1	1.6	S	9.0		41.9	34.1	
8.8		40.7	24.9	K	9.3		57.2	25.5		9.5	51	11.8	50.2		9.3	17	49.0	29.9		9.5	42	2.0	34.9	
9.2		48.8	31.3	B	9.0	26	4.2	24.3	K	9.4		14.4	22.7		9.4		54.3	32.9		9.3		10.7	52.8	
7.4		59.4	55.7	K	8.4		32.8	14.1	K	9.3		55.1	42.9		9.5	18	20.6	35.0		8.4		31.3	26.1	K
8.9	9	11.8	19.5	K	9.2		48.7	35.1	K	9.4	53	3.8	29.6		9.5		35.1	48.8		8.7		54.8	47.6	K
9.5		37.2	43.7		9.2		56.3	29.5		9.2	54	5.3	33.1	K	8.9		53.2	34.6	K	8.7		55.7	29.4	K
9.5	10	7.8	15.2		8.6	27	7.8	12.3	K	9.5		17.3	29.5		9.5	20	22.8	50.7		9.2	43	1.4	13.6	
9.3		38.1	29.4		9.4		35.1	36.4		9.5		25.6	34.4		9.5		47.5	43.8		9.5		44.8	25.1	B
9.2		40.0	17.0		9.5		40.0	59.3		9.5	55	2.8	38.4		7.5	21	35.1	46.4	B	9.5	44	43.7	20.9	
9.2		50.2	38.6	K	9.1		43.3	57.6	B	8.9	56	36.3	6.3		8.9	22	26.3	10.1	K	9.5	46	21.9	28.6	
9.3	11	32.2	17.3		7.6	28	21.9	34.2	K	9.5		40.1	27.1		9.5		57.9	56.1		9.3		30.5	32.6	B
9.3		32.5	4.4		9.3		41.1	0.5		9.3		58.4	2.7		9.1	23	23.2	59.8	K	9.5	47	46.4	9.0	B
8.3		59.4	26.5	R	9.4		48.8	25.0		9.5	57	42.5	20.7		6.5		30.4	30.4	K	9.5	48	5.7	20.1	
9.4	12	3.3	51.9		9.5		52.6	23.3		6.8	58	9.3	59.6	B	9.4		36.6	27.6		7.2		31.5	49.3	K
9.5		24.8	42.4	R	8.2	29	0.7	39.6	G	9.2		16.5	38.0		9.3		51.3	56.2		9.5	49	5.1	58.5	
9.3		34.0	37.1	R	5.9	30	29.3	40.4	K	8.5		23.9	22.7	K	9.3		58.6	25.6	K	9.5		16.3	23.5	
8.8		46.5	21.3		9.3		40.0	34.8		9.5		36.9	7.2		8.2	24	2.4	23.1	B	9.1	50	27.2	59.1	K
9.3	13	4.0	1.1		9.1	31	4.6	10.2		7.0		40.0	56.4	B	8.7		14.5	39.3	K	9.3	51	14.3	44.8	
9.3		48.5	30.8		8.8		56.9	28.8	K	7.7		45.8	16.8	K	8.8		39.8	45.3	K	6.5		17.3	10.0	K
8.7	14	0.0	18.3	R	9.4	32	45.0	36.8		9.1		49.1	14.8		9.5		54.6	4.9		9.0		28.0	50.9	K
9.4		6.7	55.5	B	9.3	33	24.3	56.2	K	9.5	59	9.5	49.3		9.4	25	9.0	26.9		9.2		30.2	27.7	B
9.3		30.0	2.8		9.5	34	6.4	39.8		9.0		48.2	17.7	K	9.5		34.2	13.1		9.0		31.8	45.3	
9.3		35.3	41.3		9.5		49.7	9.8		8.7		49.5	17.2	K	9.3	26	23.0	23.7	K	9.1	53	32.2	41.0	
9.5		35.8	26.6		9.3	35	15.4	0.5	K	9.1	0	3.6	54.9	K	9.5		53.3	33.9		9.3		57.3	8.5	K
8.6		49.0	5.7	K	9.5		49.4	36.4		9.0		46.9	49.6	K	9.1	27	45.4	25.0	K	8.9	54	7.8	39.7	K
9.4	15	7.1	24.3	B	8.7	36	4.7	0.4	K	9.3	1	0.1	3.6		9.5		51.8	44.3		7.3		16.5	24.0	K
9.3		15.7	8.4		9.0		26.3	34.8	K	8.4		4.3	47.3	K	9.2	28	3.5	33.5	K	9.5		43.4	39.0	
9.5		21.3	48.7		8.3		54.2	37.2	K	9.2		33.8	53.5		9.5	29	13.8	47.3		8.4		47.5	6.7	L
9.2		25.9	41.3	K	9.4	37	11.8	21.2		9.0		53.9	32.1		9.5		19.7	31.1		9.5		59.3	25.5	
8.0	16	22.5	6.4	L	9.5	38	4.3	40.6		9.5		57.7	57.2		8.8		21.6	41.0		8.5	56	7.0	59.5	K
9.5		25.5	34.0		9.5		28.5	49.3		9.2	2	46.3	39.0	K	9.3		53.4	2.6	K	8.0	57	23.7	38.7	L
9.4	17	6.4	31.3		9.3		35.5	20.4		8.6		53.5	52.2	K	9.1		54.7	16.4	K	7.2		36.0	51.2	K
7.1		43.3	57.0	K	8.0	40	1.9	22.8	B	9.3	4	1.4	8.9		7.7	31	18.2	40.6	K	8.6		36.1	30.9	

2001—2060				2061—2120				2121—2180				2181—2240				2241—2300			
	8ᵘ—9ᵘ	+38°			9ᵘ—10ᵘ	+38°			10ᵘ	+38°			10ᵘ—11ᵘ	+38°			11ᵘ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	57 47.4	14.1		9.5	36 26.7	51.7		9.0	8 50.9	35.0		9.2	40 51.9	56.6	B	8.6	18 49.6	31.1	K
9.5	59 52.8	25.0		8.7	53.2	34.1	K	9.5	56.8	54.2		9.3	58.3	45.6		9.5	59.4	17.3	
9.2	0 4.6	37.4		9.4	37 8.6	9.0		9.4	9 26.5	22.5		9.0	58.3	28.6		9.3	19 9.7	13.7	B
9.1	28.3	3.0	K	9.4	38 7.4	19.8		9.2	42.5	52.8		8.6	41 24.3	48.0	K	9.4	19.2	3.1	
9.0	1 29.6	13.5	K	9.4	16.3	44.3		7.7	49.8	13.7	K	9.3	42 1.6	47.3		9.5	35.0	37.8	
7.8	35.3	55.2	K	9.4	59.3	57.1		9.3	11 3.0	54.6		8.4	6.9	51.8	B	9.2	35.8	2.6	B
8.8	2 53.1	8.5		8.6	39 7.1	16.0		9.5	12 3.2	8.2		9.5	11.0	13.9		7.0	55.6	44.3	K
9.3	3 3.3	33.8		9.3	24.6	35.2	B	9.5	6.2	2.4		9.5	44 53.5	58.0		9.3	20 55.6	3.4	
9.2	52.7	38.8		9.5	30.9	42.1		9.4	34.9	4.2	B	9.5	45 38.2	49.1		9.5	21 33.5	15.3	
9.5	4 5.8	31.6		9.5	40 33.7	49.5		9.4	54.5	7.5		9.0	51.4	29.3		7.2	22 28.9	44.0	K
9.3	25.9	3.0		9.5	40.5	26.5		9.0	13 55.2	54.7		9.4	46 34.1	25.8		9.5	23 50.0	34.6	
9.5	5 46.8	38.2		9.4	49.6	14.0		9.1	14 30.5	56.7		9.3	59.9	35.0	B	9.3	24 34.1	59.9	
8.6	57.1	20.9	K	9.5	51.8	32.4		9.5	15 25.5	41.5		9.4	47 31.7	6.9		9.1	40.0	0.0	K
9.3	58.4	39.2		9.5	41 44.1	9.5		8.3	47.0	52.0	K	9.5	48 40.8	42.5	B	9.4	25 10.5	30.6	
8.5	6 0.2	56.7	K	9.0	42 28.5	16.9		8.8	16 9.4	26.6		9.3	41.2	29.3		9.3	14.5	43.9	
9.4	26.5	1.1		6.3	43 34.1	36.2	K	8.1	31.8	45.0	K	9.4	49 6.0	10.6		9.1	29.4	54.0	
8.6	34.8	54.7	K	9.4	44 53.5	26.3		9.4	37.5	18.3		8.4	18.8	25.2	L	9.5	38.8	22.8	
9.2	7 8.2	42.3		8.9	45 42.2	9.9	K	9.5	49.6	18.2		9.4	37.9	58.0		9.5	26 59.8	53.5	
9.5	55.1	59.4		8.4	46 5.6	6.9	K	8.6	17 33.2	36.8		9.2	52.1	37.6		9.5	28 15.5	23.2	
9.3	8 47.5	5.9		9.4	10.4	31.3	B	8.6	55.1	27.6		9.5	50 41.9	3.1		9.5	29 12.9	38.9	
8.5	9 25.3	42.7	K	9.5	21.5	30.3		8.8	18 45.2	24.0		9.5	46.2	32.5		9.5	30 28.0	43.5	
7.8	11 3.5	22.8	K	9.0	32.8	37.2		9.0	20 14.8	53.5	K	8.7	51 21.8	45.5	K	9.3	36.5	48.5	
9.5	7.6	33.0		8.0	47 12.2	46.5	K	9.0	50.4	39.5		9.0	27.2	25.1		9.5	31 35.1	49.4	
9.5	23.7	51.2		9.1	21.5	57.0		8.8	21 8.8	40.1		9.5	58.8	17.4		8.6	58.5	1.0	K
6.7	54.9	48.2	K	9.0	48 17.7	45.6	K	9.4	46.4	33.4		7.8	53 35.1	46.8	K	9.5	33 1.4	27.5	
8.6	14 9.0	0.6	K	9.1	49 5.6	2.0		9.2	47.9	22.7		9.1	54 3.4	47.0		9.5	49.4	56.0	
8.8	13.3	56.7	K	9.4	12.3	6.5		8.4	50.2	27.3		9.5	55 6.8	33.8		9.5	34 17.8	34.7	
9.0	15 38.5	4.5	K	9.5	31 8	21.5		9.5	52.1	45.3		9.3	10.8	54.6		9.1	20.5	9.3	B
9.1	16 36.9	54.6		9.3	50.0	14.0		9.5	57.7	42.8		9.4	57 58.8	47.0		9.3	25.4	48.1	B
7.8	37.7	31.3	L	8.9	50 33.9	27.8	K	9.3	22 12.9	42.1	B	9.4	58 50.3	33.2	B	9.2	35.5	2.4	
9.5	17 14.6	47.2		9.4	36.5	11.3	B	9.5	50.1	6.4		8.8	0 19.7	46.3	K	8.7	35 28.8	3.4	K
9.4	18 7.7	50.2		9.5	51 23.8	44.1		8.8	24 53.4	25.3	K	9.3	1 33.3	52.7		8.6	51.1	3.9	K
9.4	19 2.6	8.7		8.5	53 13.6	25.6	K	9.0	25 28.1	41.2		8.8	2 47.4	43.0	K	8.5	36 40.6	20.3	K
9.5	24.6	52.0	B	7.8	54 12.3	36.3	K	9.2	49.1	46.2	B	9.1	3 18.7	50.7		9.1	43.5	46.2	B
9.4	35.3	6.5		9.3	55 6.7	12.3	B	9.3	52.5	35.2		8.4	25.4	28.1	K	8.4	37 12.3	44.0	K
9.2	42.5	2.5		6.5	13.2	45.5	K	9.5	26 36.6	57.3	B	9.1	5 16.3	57.2		9.5	38 27.0	18.3	
9.5	54.9	41.7		9.4	27.6	37.4		9.5	27 14.8	7.4		9.5	6 30.5	12.0		9.3	56.2	25.0	
9.3	20 18.4	53.2		8.4	56 37.1	20.7	K	9.4	57.8	36.5		9.5	7 0.0	8.7		9.3	40 44.2	37.2	
9.1	27.0	40.7	B	9.5	50.4	3.6		8.9	28 10.7	37.2		7.9	6.4	22.5	K	8.9	46.3	11.9	
9.1	56.8	35.7	K	9.5	57 34.8	59.5		9.0	20.5	7.0	K	9.1	57.8	26.5		9.5	57.9	48.0	B
9.3	21 31.9	49.7		9.1	49.1	7.5		9.5	44.2	43.5		8.3	8 47.9	11.5	K	9.4	41 28.1	49.0	
8.9	55.8	52.8		9.1	58 0.9	24.5	K	9.5	58.7	34.0		9.2	9 25.1	10.5		9.4	42 5.2	5.9	
9.4	23 39.0	23.1		8.0	19.8	44.1	K	9.4	29 41.7	21.3		9.1	25.3	14.3		9.2	16.4	41.7	K
9.3	24 5.0	35.4		8.5	20.1	16.0	K	9.5	59.8	55.4	B	9.5	10 54.8	30.2		9.3	43 7.8	8.8	B
9.3	19.2	37.8		9.5	0 9.2	26.9		8.5	30 35.2	1.0	L	4.8	11 12.9	58.7	K	6.5	44 35.6	45.5	K
8.5	30.6	22.9		8.3	58.6	52.5	K	5.7	49.8	38.9	K	9.5	30.5	39.4		9.3	45 29.9	21.9	
9.0	25 19.3	30.6		9.1	1 6.8	5.1		7.8	31 30.1	34.9	K	9.5	47.4	34.3		9.5	45.2	57.0	
9.3	26 9.5	29.7		9.5	9.4	21.9		9.5	32 5.0	14.4		7.5	47.5	53.2	K	8.5	46 33.7	44.5	K
9.5	26.6	9.9	B	9.1	51.9	15.3		9.5	6.2	5.0		9.5	13 38.8	43.2		8.9	52.6	51.0	K
9.2	51.8	55.2		6.0	2 37.4	6.9	K	9.3	33 9.5	36.6		9.1	46.5	18.5		9.4	47 39.7	34.6	B
9.4	27 4.3	44.3		9.1	3 9.6	15.0		8.9	50.3	0.6	K	8.7	14 57.3	9.0	K	9.5	50 4.2	21.2	
8.2	9.1	12.0	K	9.5	4 37.5	22.8		8.0	58.0	47.1	L	9.5	15 0.7	13.2	B	9.3	46.9	22.8	
9.0	28 6.4	26.4	K	9.4	45.9	21.0		9.3	34 6.1	6.0		9.4	9.2	44.2		9.3	51 1.3	44.0	
8.7	23.6	33.4	K	9.5	48.8	24.3		8.5	35 59.8	15.9	K	6.8	16 2.7	0.8	K	7.8	17.2	40.6	K
9.5	52.6	52.2	B	9.5	54.9	29.5		9.1	36 0.2	25.9		8.9	14.4	52.2	K	9.2	52 12.1	31.1	
9.5	30 20.7	37.4		9.0	5 0.0	31.3		8.0	46.3	52.0	K	8.4	18.5	30.1		9.0	32.7	53.0	
9.2	31 20.4	51.2		8.1	6 10.2	40.1	B	9.4	38 29.2	17.4		9.2	44.1	38.4		8.6	56 39.0	48.0	K
9.2	34 29.0	23.9		9.5	24.5	59.0		9.5	39 30.8	10.4		9.2	52.4	45.2	K	9.2	46.5	18.8	
9.4	35 41.3	6.5		9.3	47.0	49.9	K	7.0	40 8.9	20.0	B	9.5	18 25.3	59.1		9.2	57 14.3	31.3	
9.5	47.8	33.0	B	9.2	7 7.8	49.5	K	9.0	10.1	42.5		9.5	47.7	7.9	B	9.3	59 7.4	54.5	

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	12ᵘ		+38°		12ᵘ—13ᵘ	+38°			13ᵘ	+38°			13ᵘ—14ᵘ	+38°			14ᵘ	+38°	
m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′
9.2	0	46.6	23.3	K	8.7	36	10.1	51.4	B	9.5	10	37.8	44.7		8.9	43	10.7	36.3	K	7.5	11	58.4	19.9	K
9.5		48.7	34.9	B	9.2		56.0	52.2	B	8.2		59.9	18.3	B	7.8		12.9	1.0	K	9.2	13	15.5	35.3	
9.5	1	9.8	52.5		9.5		59.2	45.0		9.5	11	15.4	1.9		9.4	44	22.6	23.7		9.3		16.4	32.4	
8.5		28.8	39.3	K	9.5	37	18.5	7.4	B	9.5		27.3	12.8		9.4		24.7	13.5		7.5		27.5	16.9	K
9.5	2	16.0	33.5		9.5	38	29.8	51.1		9.5		36.1	55.0		8.0	45	11.4	25.7	K	9.0		47.6	37.3	K
9.5		50.4	27.0		8.1		42.2	58.6	K	9.5		38.7	15.8		9.5	46	22.3	33.0		9.4	14	6.5	18.5	
9.5	3	14.0	21.9		9.5	39	9.4	31.6		9.3		46.5	42.6		9.0	47	41.2	35.6	K	9.2		13.9	5.5	
9.5		46.0	42.5		9.2		52.6	1.4		8.5	12	23.9	8.8		9.2		54.2	52.3		9.1		22.0	37.0	
9.5	4	44.4	9.6		9.5	40	44.8	36.1		9.5	13	2.5	27.0		8.5		58.7	57.8	K	8.0	15	9.5	4.0	K
9.1	5	1.4	18.1	K	9.5	41	36.9	27.4		9.0		7.6	38.8	B	9.5	49	25.3	32.0		9.4	16	42.7	37.3	
9.3		15.1	33.5		9.4		49.0	0.7		7.2		31.7	55.7	L	9.5		56.6	56.0	B	9.5	17	22.4	10.0	
9.3	6	53.5	50.5	B	9.4	42	39.6	15.2	B	8.4		42.7	26.0		9.4	50	17.2	32.5	B	9.5	18	10.1	29.7	
9.5	7	12.3	41.3		6.0	43	16.1	19.3	K	7.0	14	10.6	18.8	K	9.5		18.0	11.0		9.4		54.4	34.6	
9.5		50.8	52.7		8.1	44	12.0	10.3	K	9.5		11.9	26.8		8.4	51	0.0	29.3	K	8.8		58.4	10.5	K
9.1		53.4	41.3	K	9.5		52.5	34.3		6.8		36.7	37.1	K	9.1		47.1	26.2	K	9.0	20	20.5	37.5	K
8.8	8	5.4	16.7	K	8.8	45	32.8	1.4		8.5		37.7	33.1	K	9.4	52	15.0	37.9		9.4	21	53.3	55.5	B
9.3		13.8	25.7	B	8.3	46	42.8	46.1	K	9.5	15	59.8	29.6	B	9.0		29.6	44.9	K	7.8	22	13.1	12.4	B
9.4		54.9	4.7		9.5		59.9	17.4		9.3	16	34.3	9.4		9.2	53	5.3	35.0	B	9.0		36.5	53.8	
9.3	9	21.6	14.6	B	9.5	47	4.6	47.2		9.5	17	1.5	21.7		9.5		15.6	26.6	B	9.5		43.8	25.0	
9.0		27.3	26.1		8.3	48	0.4	34.4	K	9.1		57.2	3.0		9.5		41.3	31.7		8.8	23	14.5	54.9	K
8.8		38.4	16.2	K	9.5		47.1	14.9	B	9.3	18	14.0	6.3		8.9	54	10.4	34.9	K	9.2		32.3	38.0	
9.5	11	14.0	58.0		9.2	49	21.1	34.3	B	8.5		22.7	17.5	B	8.9		19.9	32.0		9.5	24	29.0	32.3	B
9.4		54.3	12.6		9.4		54.2	29.6		7.6		27.4	11.5	K	8.8		59.2	53.8	K	9.0		44.8	23.4	
6.5	13	1.0	43.2	K	9.4		58.2	29.3	B	9.0		28.5	16.7	K	9.2	55	24.4	4.5		8.5	25	17.0	51.9	K
9.3		46.0	32.0		9.5	50	3.4	8.3		9.5		58.3	28.7	B	9.5		34.5	40.8		2.8	26	14.2	57.5	K
7.3		51.5	50.5	K	9.5	51	16.5	2.4		8.0	19	13.1	35.9	K	8.7	56	0.6	18.9	B	9.2		54.2	20.3	B
9.4	17	4.8	48.1		9.4		31.9	21.8		9.5		14.4	38.9		9.0		4.0	12.7		9.4	27	23.4	14.0	
9.4		12.8	42.1		9.1		58.5	15.1	B	9.0	20	45.6	55.3	K	9.5	57	25.8	51.9		9.5		26.5	8.9	
8.8		20.7	29.4	K	8.6	52	33.9	35.4	K	9.3		59.6	43.9	K	9.5		30.0	26.0	B	9.5	28	15.6	24.3	
9.3		21.5	31.3	K	9.5	53	20.3	4.4		8.5	22	46.9	42.4	K	7.8	58	2.4	3.6	K	7.5		41.1	38.4	K
7.5		57.3	2.3	L	8.8		40.3	30.1	B	8.5	23	15.3	21.7	K	9.3		27.2	2.5		9.2	29	3.9	33.9	K
9.1		57.6	43.1		8.5	54	17.3	10.3		9.1	24	0.3	2.5		8.8	59	32.0	9.0	K	9.3		4.5	26.9	
8.0	18	16.8	13.7	L	9.5		18.4	20.3		9.3		5.8	57.0	B	9.5	0	3.6	37.6	B	9.3	30	11.2	11.1	
9.5	19	7.1	19.2		7.8		35.5	49.4	L	8.3		14.3	31.0		9.1		19.5	30.7		9.5	31	35.8	43.0	
9.5		11.1	7.1	B	9.3		58.1	33.2	B	9.4		57.2	8.4		9.5	1	3.2	50.3		9.5		48.0	29.6	
9.5		29.3	1.4		7.0	55	36.8	6.8	K	9.5	25	24.4	43.0		9.5	2	18.7	8.5		8.1	32	5.5	1.9	K
9.4	20	14.6	3.0		8.9	57	9.8	11.3		8.9	27	38.5	22.3		9.3	3	14.7	2.0		9.5	33	46.4	3.7	
9.4		21.5	22.3		7.8	58	11.9	2.9	K	8.6	28	4.9	22.1		7.5		38.4	0.6	K	7.0	34	12.0	43.1	K
9.4	21	6.6	49.1		9.0		26.8	10.3		8.9		44.4	0.8	K	9.4		52.8	12.0		7.2	35	11.8	46.0	K
9.3		16.7	10.3		8.5		30.6	48.2		8.6		54.9	8.9	B	7.5	4	23.3	40.9	K	9.0		36.5	53.5	K
8.9		44.3	52.0	K	9.0	59	4.4	59.1	K	7.7	29	7.9	27.3	K	8.0		28.0	10.7	B	9.5	36	34.1	2.7	
8.5		49.0	23.9	K	8.5		37.4	1.9	K	9.2		47.9	25.3	K	9.4	5	21.9	9.6	B	9.5	37	43.2	36.0	
9.0	23	8.3	19.4		7.5	0	32.7	2.8	K	9.2	31	22.5	10.9	B	9.5		32.7	43.4		9.0		51.0	21.9	B
8.0		52.5	57.4	K	9.5		52.5	7.8		9.4		31.2	37.6		9.5	6	1.7	23.9	B	9.5	39	10.1	31.6	
9.5	24	34.6	12.4		9.4		53.6	40.1		8.6		44.9	44.2	K	8.6		2.5	12.4	K	9.4		18.4	9.6	
9.3		38.2	33.8		9.5	2	10.4	47.6		9.4	32	3.9	29.7		9.4		36.4	3.6		9.4		28.5	15.6	B
6.8	26	27.0	53.0	K	6.0		59.3	12.7	K	9.0	33	37.8	42.9	K	9.1	7	3.3	54.8		9.4		52.0	35.8	
9.3	28	19.5	24.5		9.4	3	42.2	48.6		9.0	34	59.6	7.1	K	7.9		43.4	15.4	L	9.5		52.5	50.5	
8.3		46.0	19.4	B	9.5	4	2.7	33.4		9.2	35	42.0	16.8	B	8.6		59.5	1.1	K	8.7		59.5	20.7	K
8.7		49.0	34.4		9.4		59.4	25.2	B	9.2		48.9	30.3	K	9.4	8	12.0	59.9		9.5	42	11.5	40.3	
8.3	30	34.2	35.7	K	9.4	5	4.8	55.0		8.5		54.8	33.3	K	9.5		39.3	48.9	B	8.2		19.7	17.6	K
9.3	32	15.4	49.2	B	8.8	6	23.9	8.9	K	9.2	36	51.5	19.0		9.5		42.0	18.3		9.5		57.0	42.0	
9.5		42.1	0.9		8.3		59.9	59.0	B	7.4		54.1	59.1	B	9.0		49.9	43.8	B	6.2	43	26.3	24.2	K
9.5	33	14.1	13.7		9.1	7	3.6	27.3	B	9.5	37	5.0	19.0		9.1		57.9	9.2	K	9.4	44	53.6	31.8	
9.5	34	7.3	0.5		8.9		14.2	31.8	K	9.5	38	17.9	43.2		9.2		58.8	47.5		9.4	45	12.9	8.8	
9.5		28.4	15.3		9.5	8	31.5	37.6		9.3		57.0	2.5		9.4	9	12.5	8.5		9.2		59.5	48.0	
9.0		38.1	36.8	K	9.0		33.0	47.6		7.3	39	43.4	16.5	K	8.8		31.0	27.3		9.5	46	3.2	35.3	
9.5	35	10.3	45.6		8.9	9	12.9	23.8	K	8.2	40	53.4	20.0	K	8.4	10	35.4	25.5	B	8.5		48.2	59.0	K
9.5		19.4	14.3		8.6		58.1	59.6	K	6.8	41	14.5	37.3	K	9.5	11	16.5	18.7		8.9		58.4	3.7	
8.7	36	6.3	53.9	K	9.1	10	12.0	56.6		9.5		29.3	23.0		9.5		29.7	37.9		9.3	48	0.6	24.5	

2601—2660					2661—2720					2721—2780					2781—2840					2841—2900				
	14ᵘ—15ᵘ		+38°			15ᵘ		+38°			15ᵘ—16ᵘ		+38°			16ᵘ		+38°			16ᵘ—17ᵘ		+38°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	48	44.3	44.5		9.5	22	21.1	14.6		9.5	55	52.3	58.7		9.2	22	35.1	23.7	B	9.3	43	42.8	15.1	B
9.4	49	0.4	1.8		8.6		46.0	51.1	S	9.5	56	9.8	36.3		9.0	23	32.7	8.6		9.1	44	31.7	51.2	K
8.0	50	3.2	32.7	K	8.8		50.5	30.2	K	9.5		46.5	32.2		9.5		34.9	25.5		8.5		50.6	50.7	K
9.3		12.4	48.5	K	8.9		59.8	43.1	K	9.1	0	15.8	12.0		9.3	24	22.8	25.9		9.3	45	1.7	45.3	K
9.2	51	42.3	37.8		8.9	24	1.0	27.6	K	9.5		58.0	14.0		9.4	25	7.1	48.0	B	9.2		19.3	12.0	
8.7	52	8.1	19.1	K	9.5		4.5	23.7		9.3	1	57.9	59.3		9.5		20.2	10 5		9.3		31.5	2.4	B
9.4		35.9	39.4	B	9.0		51.5	59.9	K	9.1	2	58.3	0.1		7.8		26.9	39.7	B	9.0		53.8	23.2	L
9.4	54	21.8	48.1	B	7.8	25	18.3	39.6	K	9.5	3	38.1	22.5		7.5		49.9	22.7	K	8.6	46	20.8	11.4	L
9.5		52.9	16.2		8.9		27.7	7.7		9.5		59.8	22.0		9.5	27	20.5	40.3		9.5		27.0	12.8	
9.5	55	28.4	39.1		9.3	26	1.0	40.1	K	9.3	4	26.6	1.1	K	9.5		22.1	49.8		8.5		36.6	46.7	K
9.5		34.8	18.6		8.9		16.3	34.6		8.7		36.3	50.9	K	8.4	28	5.7	21.9	L	9.5		50.9	8.5	
9.5		57.5	21.6		9.2		26.3	3.2	K	9.0	6	48.8	44.4	K	9.3		30.1	36.4	B	9.0	47	20.6	30.1	
9.5	57	9.3	29.2		9.3	27	24.2	25.0		9.4	7	26.4	24.5	B	9.0		32.5	18.9		9.2		26.3	57.8	K
9.5	0	36.0	40.1		9.2		24.7	9.1	B	9.5		32.2	9.6		9.5		35.1	34.3	B	9.4	48	7.0	35.1	
9.5	1	28.6	23.9		8.2		56.8	56.3	K	9.5		55.2	42.8	B	6.8		38.6	24.2	G	9.3		36.1	40.8	
9.4	2	49.6	43.5		9.5	28	43.0	41.3		6.8	8	2.0	26.9	K	9.2	29	4.3	40.8		8.8		36.7	44.7	K
9.4		56.2	32.0		9.5	29	10.8	58.3		9.5	9	10.2	10.0		9.5		23.8	59.7		9.0	49	15.1	5.9	
9.5	3	36.7	35.4		6.5	30	27.4	51.3	K	9.1		19.2	31.6		8.5		29.9	16.7	K	9.5		32.7	36.1	
9.0		48.8	10.6	K	9.5	31	30.2	17.0		9.1		28.8	28.9	K	9.2		48.9	53.3		8.6		46.7	55.2	K
7.9	4	33.4	14.7	K	9.4	32	26.5	36.4		9.5		33.8	1.0		9.0	30	3.3	22.8	K	9.4	50	39.8	5.5	
8.5		34.3	59.0	K	9.5		32.2	38.4		9.4		39.5	15.7	B	8.4		22.0	3.4	L	8.7	51	3.7	27.5	
9.2		34.7	39.4		9.3		33.9	5.8	B	9.5		58.5	44.3		9.0		43.4	44.3		8.7		12.4	36.4	K
9.3		47.3	49.6		7.7		46.8	30.3	B	9.5	10	1.9	48.4		8.9		53.4	15.9		8.1		21.5	8.4	K
9.2	5	37.7	0.8		9.3	33	42.2	13.0		9.5		48.8	11.1		9.5	31	20.2	57.3		9.5		37.0	37.7	
9.3	6	52.1	22.1		9.5	34	7.7	48.2		9.1		50.4	59.8	B	9.1		58.4	37.9		8.5	52	20.3	24.2	
9.5		58.0	29.0		9.4		43.5	18.0		8.5	11	6.3	44.0	K	9.0		58.6	57.8		8.5		45.9	20.2	L
9.3	7	0.3	24.4	B	6.6	35	2.4	0.1	K	7.5		36.6	59.3	K	8.7	32	8.9	12.4	L	9.5		58.8	8.9	
9.0		56.0	20.2		7.5		42.3	42.4	K	9.2		52.8	48.9	K	9.5		34.8	32.0		9.0	53	23.3	43.7	
6.0	8	4.0	47.6	K	9.3	36	18.0	33.1		9.4	12	0.2	10.0		9.1		39.0	17.9		8.0		38.2	11.4	K
9.5	9	2.1	1.8		9.2		26.6	29.1	B	8.8		42.2	3.2		8.9	33	32.9	36.8	K	9.2	54	9.3	33.1	
7.0		24.8	51.0	K	9.0		52.8	52.3	K	8.7		58.5	22.3		7.2	34	7.7	37.5	K	8.5		28.5	34.0	
9.4		30.8	23.2		9.3	38	20.4	54.3		7.8	13	9.7	37.8	L	9.5		8.4	6.5		8.0		49.3	4.3	K
9.3	11	21.3	46.0		8.2	39	7.0	0.0	K	9.5		37.0	0.2		8.0		43.2	29.1	B	9.5	55	39.9	24.4	
9.5		50.4	15.2		9.3		34.3	41.8		9.3		37.8	11.0		9.3		56.9	52.9	K	9.3	56	21.3	5.9	
9.3	13	0.7	31.6		9.3		37.4	43.8		7.0		51.2	7.5	K	9.3	35	17.0	27.8	B	9.1	57	22.0	34.5	
9.5		9.9	9.2		9.3	41	14.2	34.7	B	9.5		55.6	32.9		9.5		42.7	10.0		8.5		56.4	54.1	
9.2		21.4	27.2		9.2		22.5	22.3		9.0		56.5	17.4		9.5	36	1.7	2.5		9.0	58	49.4	47.2	
9.4		37.8	4.2		9.5		25.1	42.4		9.4	14	23.2	19.2		9.2	37	1.9	39.8		9.1		56.8	0.6	K
8.9		38.9	0.9	B	9.4		58.5	26.4		9.5		33.8	4.6		9.4		7.0	9.2	B	8.7	59	10.0	24.4	
8.8		44.5	55.0		9.5	42	46.2	32.9		9.2		42.2	14.5		9.2		32.7	21.9	K	9.4		35.0	28.8	
9.5		44.9	13.2		8.8		48.0	25.6		9.0	15	55.0	1.1	K	9.5		40.6	58.8		9.2	0	17.0	37.7	K
8.2		48.4	18.6	K	9.0	44	8.6	42.8	B	9.5	16	51.1	38.2		9.0		45.9	46.4	K	9.1		22.2	6.0	L
9.3		54.0	23.5		8.8		18.8	44.3	K	8.6	17	16.9	5.1	K	9.1		55.2	33.3		9.5	1	27.3	37.7	
9.1	14	9.4	15.2		9.5		46.7	22.2		9.5		34.0	39.1		9.5	38	6.5	1.5		8.0	2	7.7	41.3	L
9.3		59.2	57.1	B	9.5		49.3	35.8		9.1		47.2	35.9		9.5		39.0	48.8		8.5		33.0	21.8	
9.5	15	14.5	37.1		8.0	45	15.5	16.9	K	9.5		50.1	23.5		9.5		58.4	50.3		9.4	3	41.2	13.8	
9.5	16	32.5	36.8		9.2		22.3	41.4	K	9.5	18	25.2	3.7		8.9	39	1.3	45.8		9.0		44.2	16.8	K
8.5	17	24.4	22.9	K	7.5		33.4	0.6	L	7.8		54.1	59.7	K	8.5		41.9	54.2	K	9.2	4	16.6	20.9	K
8.8		39.1	27.2	K	9.2	46	48.1	59.3	K	7.5	19	11.9	47.8	K	9.4		43.0	47.8		9.2		18.5	34.7	
9.5		54.0	44.0		9.5	48	5.0	21.0		8.4		43.2	29.3	B	9.1	40	4.4	59.6	K	9.1		26.8	43.0	
9.0	18	45.5	40.5	R	9.4	49	41.5	28.6		9.2	20	0.8	49.4		9.1		8.5	14.8		7.7		40.1	29.4	K
7.5		53.0	42.1	L	5.7	50	30.7	22.3	K	8.2		18.6	14.5	K	9.2		17.8	1.4	K	7.7	5	16.2	56.2	K
8.5	19	7.4	11.2		9.5		47.4	55.3		9.0		56.9	40.0	K	8.7		22.7	37.1	L	8.7	7	37.5	23.5	K
9.2		36.8	2.8		9.3	51	23.3	46.9		9.5	21	15.3	15.5		9.5		30.0	38.3		9.2		59.7	11.4	K
8.9		38.7	13.0	B	6.8	53	7.6	14.4	K	8.7		32.7	6.0	K	9.4		50.5	26.8		8.6	8	54.4	42.3	
9.5	20	2.3	39.1		9.5		50.0	0.1		9.4		50.5	20.4		9.2	41	30.8	41.2		9.5	9	43.5	11.9	
9.5		14.4	18.2		9.5	54	4.9	11.0		9.2	22	4.2	27.5		9.4	42	12.8	9.3		9.5		57.1	46.2	
9.3	21	10.4	1.8		8.7		30.1	53.3	K	8.8		6.7	25.2	K	9.5		26.0	18.8		9.0	10	9.8	28.4	K
9.4		22.0	55.5		8.9		55.2	10.5		9.3		10.5	18.4	B	9.5		55.5	22.2		9.5		30.5	1.8	
9.3		29.5	9.2		9.5	55	38.4	23.3		9.3		21.3	19.0		9.2		59.1	28.1	K	9.5	11	22.1	30.3	

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	17ᵘ		+36°		17ᵘ		+38°		17ᵘ—18ᵘ		+38°		18ᵘ		+38°		18ᵘ		+38°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	11	29.8	14.9		9.3	29	34.6	35.2	9.3	47	41.9	25.6	9.0	1	51.7	42.3	9.5	15	33.3	26.7	
9.5		30.2	22.4		9.3		57.6	39.7	8.0		47.5	16.7	8.7		55.3	53.2	9.3		37.6	43.1	
9.5	12	33.8	23.8		9.3	30	5.2	18.3	9.3		50.2	45.4	9.4		59.2	37.0	9.3		45.4	21.7	
9.2		35.7	26.1	K	8.8		11.4	6.2	8.8		52.1	36.1	9.5	3	8.4	20.7	8.4	16	0.9	19.0	K
9.2		43.5	4.0	K	9.5		28.5	36.5	7.5		53.5	53.4	K	9.5		11.6	51.0	8.1		9.0	59.7	K
9.5		48.4	51.9		7.8		59.4	6.3	K	8.5	48	6.4	57.3	K	9.4		20.2	42.0	9.5		10.6	0.5	
9.5		51.6	12.8		9.1	31	6.6	23.4	8.7		30.6	15.2	8.1		42.0	9.4	9.5		41.1	42.0	
9.4	13	3.4	57.2		9.5		42.9	21.8	8.8		41.4	34.2	8.6		56.9	14.9	9.3		45.6	23.1	B
9.5		9.5	42.8		9.0	32	20.3	12.8	9.2		50.5	2.7	8.7	4	3.4	42.3	9.4		46.1	21.6	
6.0		32.1	57.7	K	9.5	33	49.4	18.7	9.5		52.4	30.6	9.5		3.8	43.3	8.3		49.1	16.2	K
9.4		54.4	47.7		9.5	34	37.3	59.3	9.0	49	39.6	40.0	9.4		11.5	3.7	9.5	17	2.2	2.8	
9.5	14	15.9	34.7		9.3	35	3.5	15.5	8.2		40.5	28.6	K	9.1		29.4	16.7	9.5		18.0	15.2	
9.5	15	4.7	57.7		9.5		14.4	8.2	9.5	50	31.3	49.7	8.5		41.0	53.8	K	9.1		40.4	8.0	
9.4		4.9	26.2		9.0		28.3	54.4	K	8.2		33.3	38.0	K	9.5		50.9	2.1	9.5	18	14.4	32.7	
8.9		23.4	27.0		9.0		40.2	25.3	9.3		50.7	54.4	6.7		51.6	28.2	L	9.4		18.3	11.9	
9.0		31.2	16.1		9.2		42.7	37.0	9.0	51	3.8	39.3	K	9.5	5	8.0	39.0	9.5		18.3	18.4	
9.1		32.4	23.7		8.8	36	8.2	17.9	R	9.5		12.6	55.3	9.4		19.7	45.7	7.7		31.0	14.1	L
8.4		38.4	59.7	K	9.1		9.5	15.5	9.3		34.8	15.5	9.2		48.5	5.0	9.3		51.7	38.9	
9.5		52.3	22.3		8.5		22.6	20.4	K	9.0		44.3	36.3	9.4		49.9	29.0	7.0		52.5	17.0	L
8.9	16	24.5	50.5		9.3		38.1	3.2	9.5		45.0	48.5	8.0	6	7.1	56.2	K	6.5	19	6.9	41.3	R
8.9		25.8	3.9	K	9.1		41.5	25.9	9.4	52	0.4	14.6	9.3		36.0	53.4		9.2		30.6	21.3	
9.5	17	5.9	21.6		9.1		52.3	48.9	9.2		3.5	34.0	8.7		43.2	33.1		9.1		42.1	53.3	
9.5		16.2	34.1		8.9		58.9	22.3	R	8.4		33.8	59.4	8.7		43.9	15.2		9.5		45.9	52.1	
8.2		17.6	1.7	K	7.5	37	22.0	8.8	L	8.8		46.4	58.5	8.5		58.4	21.4		9.5		50.8	39.2	
9.5		31.5	22.7		9.5		24.7	58.4	7.5	53	0.6	6.2	L	8.8	7	19.5	38.2		9.5	20	7.0	56.6	
9.5	18	12.9	44.2		9.5		32.4	57.0	9.1		22.7	56.8	8.8		19.9	43.4		7.5		30.0	21.8	K
9.5		37.0	44.5		9.5		40.0	15.9	9.0		22.7	13.2	8.6		25.0	47.1	K	9.0		35.5	59.3	
6.7	19	10.6	43.7	K	9.3		40.2	8.2	R	9.0		43.0	22.1	9.5		42.0	32.7		9.5		49.2	38.1	
9.0		16.5	13.6		9.5		41.9	22.5	9.1		47.0	25.2	8.5		48.1	33.8	L	9.2	21	7.1	10.4	
9.3		22.2	6.8		9.5	39	7.0	8.4	9.0		47.8	29.3	9.5		48.4	33.0		9.5		10.3	23.7	
9.4		37.9	21.2		9.5		15.9	49.6	9.5	54	0.7	42.4	8.0	8	4.2	16.1	K	8.9		20.1	44.6	B
8.5		47.4	10.0		9.5		42.9	12.1	8.9		6.9	45.8	K	8.3		13.2	14.5	K	9.2		23.2	6.7	
9.5	20	2.7	24.7		9.1		44.6	5.0	9.5		27.6	53.0	6.0		15.0	45.9	G	9.5		38.0	33.4	
8.9		23.4	25.2		7.5	40	0.4	24.4	L	8.2		53.9	17.7	K	9.4		21.0	54.5		9.5		44.1	50.7	
8.5		40.0	54.8		9.5		1.7	42.7	9.0	55	6.8	41.0	K	9.3		22.5	47.5		9.0		45.4	13.2	
9.5	21	9.3	47.6		9.4		58.6	40.9	9.1		9.6	34.2	9.5		45.2	25.1		9.4	22	0.8	7.5	
8.8	22	12.1	32.0		6.0	41	4.9	56.6	K	9.4		20.9	25.5	9.5		46.4	38.0		9.5		4.5	33.4	
9.2		34.3	54.5		9.3		19.5	1.2	8.9		32.5	47.7	K	9.5		50.5	2.9		9.3		9.6	37.8	
8.7		59.8	2.9	K	9.4		26.6	56.5	9.5		47.1	25.1	9.5	9	16.6	34.5		9.5		21.7	49.3	
9.1	23	9.6	32.3	K	9.4		28.7	8.9	9.5		47.6	15.5	9.5		36.9	19.7		9.5		22.9	56.3	
9.4		12.5	41.2		9.2		34.2	50.7	K	9.3	56	5.5	1.6	9.4		54.8	1.8		9.1		34.0	52.8	
9.5		39.2	12.4		8.0		38.3	37.2	K	9.0		44.1	51.2	9.5		58.8	23.9		9.4		36.0	52.8	
9.1	24	10.5	52.6	K	9.5	42	33.9	38.2		9.5	57	22.4	59.6	9.5	10	0.7	36.2		9.5	23	25.6	4.0	
9.5		17.9	15.9		9.5		35.3	7.2		9.0		29.8	10.4	9.5		41.9	58.2		9.2		29.9	20.3	
8.8		21.9	32.4		9.1		40.2	47.9		9.4		30.9	52.4	9.4		43.6	40.1		8.4		42.3	52.4	
8.3		23.6	4.1	K	7.0	43	20.5	17.2	K	9.0		56.3	14.6	9.2		47.0	17.0		7.7		43.3	40.3	K
9.3	25	18.3	1.6		9.5	44	28.9	28.7		9.2	58	18.4	50.2	K	9.4	11	15.9	20.0		9.5		50.4	32.2	
9.5		31.6	41.7		9.5		53.2	36.1		9.3		37.0	26.5	8.5		16.9	57.6	K	8.9		50.5	58.5	
9.5	26	9.0	4.6		9.4	45	47.5	51.1		8.3		38.3	17.6	L	9.2		53.0	55.3	B	9.4		50.6	18.9	
9.4		16.9	21.4		9.1		50.9	14.8		8.0		38.9	5.3	K	9.0		53.9	13.9		8.8	24	38.9	15.7	
9.5		54.6	13.2		7.5	46	15.6	29.0	L	9.3		48.8	9.4		9.1		55.2	11.1		9.5		40.8	33.6	
9.5		56.3	57.9		8.5		22.9	22.8		9.1	59	27.6	26.9		9.2		57.9	26.3		9.5		46.0	59.4	
9.5	27	42.9	44.9		9.5		34.2	29.2		8.8		54.9	42.1		9.5	12	53.5	48.6		9.5		57.6	39.7	
9.5		46.0	40.8		9.4		35.2	31.2		9.5	0	19.7	31.0		9.5	13	6.9	17.2		9.5	25	0.5	9.0	
9.2		47.6	36.2		8.8		38.9	12.1		7.6	1	2.9	59.7	G	9.4		14.5	54.8		9.5		13.7	50.2	
9.1		51.7	28.3		9.5	47	2.2	54.5		9.3		22.6	11.8		9.5	14	26.8	28.6		9.5		22.4	14.9	
9.0	28	10.2	36.9	K	9.5		3.8	22.5		8.0		25.7	23.4		9.5	15	3.9	32.8		9.5		34.5	35.6	
9.1		19.8	56.7		9.5		14.6	24.5		9.2		28.6	36.8		8.9		12.7	29.7		9.0		50.0	8.4	K
9.4		34.5	3.9		8.0		25.5	43.9	K	8.7		47.9	33.9		8.9		14.0	53.0		9.4		55.9	48.2	
9.5	29	31.0	4.9		9.5		26.6	56.3		9.1		48.5	36.1		9.4		26.8	24.8		8.5		59.5	32.5	B

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	18ᵐ	+38°			18ᵐ	+38°			18ᵐ	+38°			18ᵐ—19ᵐ	+38°			19ᵐ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.2	26 2.8	33.6		9.5	36 41.0	10.3		8.5	46 2.8	11.1		9.4	53 46.0	11.5		7.0	2 52.4	41.9	K
8.6	4.7	1.0	K	9.5	56.9	30.6		9.4	8.9	17.0	B	9.0	51.2	23.8	K	9.5	57.8	56.8	B
9.2	10.3	51.1		9.5	57.7	23.6		8.8	13.7	40.7		9.0	54 3.4	1.1		9.4	3 2.1	18.1	
9.5	15.8	51.1		9.5	37 6.3	53.2		8.8	14.0	48.1		9.5	15.8	47.6		9.5	12.5	15.0	
8.3	35.0	16.3		9.5	14.2	5.5		9.4	14.2	58.8		9.3	55 0.2	21.2		6.9	18.2	55.7	K
9.0	42.6	40.3		9.3	22.0	10.4		9.4	24.1	58.9		9.5	1.7	23.4		9.5	28.8	17.5	
9.2	27 15.2	36.8	K	9.4	39.8	51.6		7.2	27.0	27.6	G	9.5	2.1	44.2		9.4	29.0	31.5	
9.5	30.9	32.6		9.5	53.5	45.9		9.1	47.1	14.2	B	9.5	20.8	2.0		9.5	29.6	2.1	
9.4	41.7	59.1		9.4	38 11.6	37.5		9.3	53.0	55.4	K	9.5	25.5	42.7		7.2	39.7	16.4	L
9.4	44.8	15.8		9.4	15.2	52.6		9.2	55.0	13.2	K	9.5	25.7	9.6		9.4	47.9	30.2	
8.2	51.9	45.4	K	8.3	18.5	13.6	G	9.5	57.8	46.8		8.9	40.2	18.2		9.4	48.4	21.9	
9.5	58.3	50.2		8.8	28.6	2.1	R	9.5	47 14.5	17.0		9.3	42.8	28.4		9.5	54.8	15.2	
6.8	28 0.2	44.0	K	9.5	52.7	15.8		9.4	17.6	33.9		9.2	45.4	21.8		7.8	4 5.2	40.1	L
9.5	28.1	45.2		9.0	53.0	52.6		9.5	24.7	16.8		9.5	47.9	24.3		9.4	8.3	6.9	
9.5	46.3	18.1		9.5	39 10.5	31.7		9.5	48 14.8	7.3		9.2	56 24.8	4.8	K	8.0	29.2	28.8	L
9.5	50.9	52.9		7.0	11.0	23.0	K	7.5	20.3	45.3	B	9.4	42.0	57.9		9.3	41.2	47.3	
8.7	29 9.0	25.3	K	8.8	22.0	26.7	K	8.7	22.5	58.3		9.4	57 9.5	21.3		9.3	49.0	34.8	B
9.2	12.8	48.0		7.7	44.3	55.4	K	9.3	24.0	35.4		9.3	12.2	42.1		8.5	5 0.9	7.5	K
7.3	15.1	19.7	K	9.4	49.1	25.0		9.2	30.2	54.2		9.5	12.4	0.9		9.2	2.8	59.0	B
9.1	23.7	15.6		7.5	40 16.0	10.2	S	9.3	32.8	32.4		9.5	19.3	11.5		9.3	5.8	59.8	
9.4	33.9	5.7		9.5	24.8	47.0		8.6	36.9	28.4		8.5	25.7	56.9	K	9.4	15.1	49.9	
8.8	47.2	1.5		9.5	32.4	54.7		9.5	40.5	0.5		9.4	29.4	17.4		8.0	28.4	19.3	K
9.4	55.0	26.0		8.3	37.5	15.1		9.1	43.7	24.7		8.7	31.8	50.7		7.8	50.0	40.1	
9.2	55.0	43.5		8.9	40.6	34.6		9.5	51.1	33.8		9.4	40.5	51.0		7.9	55.2	55.9	K
9.3	57.6	55.1		8.8	42.0	7.2		9.5	49 4.2	33.0		9.5	45.5	3.3	B	8.8	6 5.1	55.7	K
9.0	30 5.4	8.2		9.3	47.0	58.1		9.4	7.4	7.7		9.2	48.3	42.0		7.3	13.7	32.7	K
9.3	24.3	42.2		8.8	55.1	1.4		9.5	9.0	27.9		9.5	48.6	49.3		9.5	25.8	5.7	
8.7	27.0	56.3	K	9.4	41 8.5	3.8		9.5	10.8	19.8		9.0	55.3	16.4		9.2	33.0	50.4	B
7.3	30.5	47.1	K	9.3	9.9	54.7		8.7	18.9	40.8		9.5	58 21.5	55.5		9.4	41.2	29.7	
9.5	40.6	7.1		9.5	11.7	5.5		9.4	27.1	34.4		9.0	35.2	38.2	R	8.9	50.3	9.4	
8.7	44.2	55.7	K	8.3	29.0	10.0	G	8.8	35.0	9.2	R	9.5	36.8	2.8	B	9.5	7 1.5	47.7	
9.3	31 0.8	14.6		8.1	39.0	12.2	G	9.3	37.7	28.0		9.5	47.3	40.3		9.5	19.8	49.5	
9.0	38.1	23.6		9.1	42.2	36.9		9.2	50 2.5	59.0		9.5	48.2	3.6		9.2	21.0	34.3	
9.4	39.7	56.5		9.4	42.6	43.1		9.5	10.8	7.7		9.5	50.5	27.1		9.5	27.6	56.4	
9.3	47.8	33.9		9.3	42 4.3	22.1		9.5	26.0	3.2		9.0	53.1	8.6	K	9.5	28.1	25.2	
9.4	52.0	46.4		9.5	20.8	39.8		9.5	26.3	12.8		9.5	53.5	27.8		9.5	28.3	13.2	
7.8	57.1	23.9	R	8.0	21.3	12.4	G	8.3	44.6	19.7		9.5	58.0	12.5		9.5	28.9	27.4	
1.0	32 1.9	39.1	B	9.5	41.5	8.2		9.2	51.2	51.8		9.5	59 6.4	48.1		9.2	32.1	30.4	B
9.1	8.9	45.1		9.5	47.0	41.0	B	9.2	51 35.6	43.2		9.2	8.0	1.7		9.5	38.2	49.5	
9.3	33.6	45.0		8.9	49.1	50.5		9.5	52 5.1	57.0		9.3	9.5	55.1	B	9.3	48.8	32.7	
9.5	33 6.9	38.0		8.7	54.4	55.3		9.2	9.6	42.8		9.3	15.4	45.9		9.5	52.9	55.8	
9.3	29.3	42.0		9.5	43 11.0	31.1		7.6	11.7	36.4	L	9.5	24.2	58.0		9.5	8 7.2	12.9	
9.4	31.5	47.7		9.4	14.5	59.0		9.2	15.5	57.5		8.3	47.3	40.7	K	9.5	9.5	18.6	
9.5	32.0	50.2		9.3	29.9	30.3	B	8.7	19.6	32.8		7.7	52.4	31.3	K	9.5	9.7	31.0	
9.5	41.7	6.9		9.5	37.4	57.3		8.9	22.3	1.2	K	8.6	53.2	50.3		9.4	9.8	44.3	
9.4	50.6	47.7		9.3	40.2	18.0		9.5	32.2	53.0		9.3	0 10.4	3.4		9.3	15.9	51.6	
9.0	34 8.0	54.1		9.5	45.0	32.4		9.0	37.0	44.6		9.5	31.9	7.1		9.4	30.3	1.7	
9.2	18.5	58.2		9.5	44 6.0	54.2		9.3	40.1	23.9		8.5	48.0	18.7	S	8.2	32.6	47.6	K
9.5	33.1	22.5		9.5	7.6	50.8		9.5	40.8	14.0		9.0	48.0	18.2		9.0	35.2	48.1	K
9.1	46.4	2.7		9.4	23.9	50.8	B	9.4	45.7	40.9		8.2	51.2	54.0	K	4.5	49.4	54.0	K
8.7	53.0	53.4		8.8	39.7	8.2		9.1	56.5	52.0		8.9	57.1	21.9		9.0	52.0	54.0	K
9.1	57.2	43.3		7.3	43.2	15.6	K	9.4	53 1.2	46.3		9.2	59.7	29.8		9.4	55.9	26.1	
9.5	35 11.5	30.4		9.2	43.5	38.1		6.2	4.6	4.1	K	9.2	1 8.3	13.0		7.7	9 1.8	43.6	L
7.2	18.5	14.0	G	9.2	44.4	21.4		9.4	5.7	24.3		9.3	21.8	25.3		9.3	11.1	35.4	
9.4	18.5	58.8		9.3	49.0	17.7	K	9.2	6.3	1.7	S	8.4	28.7	8.2	K	9.3	17.1	35.2	
9.4	20.0	44.6		9.5	45 13.2	18.1		9.1	8.3	15.3	K	9.5	35.1	56.5		9.2	17.5	11.1	
9.5	52.7	26.9		9.3	28.5	12.7		9.2	9.3	1.9		9.0	36.2	59.0		9.5	25.7	56.2	
9.4	36 2.9	24.4		9.5	47.3	39.7		8.2	18.5	9.5	K	9.5	45.4	33.5		9.1	33.5	20.9	
9.5	11.5	2.2		9.5	53.8	56.7		9.1	35.2	58.9		9.5	2 19.9	52.5		8.5	48.0	5.1	B
9.5	19.8	46.4		9.3	46 2.4	28.9		9.5	35.9	45.4		9.5	30.3	37.2		9.5	53.4	56.0	

3501—3560				3561—3620				3621—3680				3681—3740				3741—3800			
	19ʰ	+38°			19ʰ	+38°			19ʰ	+38°			19ʰ	+38°			19ʰ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.7	9 56.3	10.1		9.4	17 39.2	37.4	B	8.8	25 20.8	37.7	K	9.1	32 15.8	25.4		9.0	39 58.7	50.5	K
9.4	59.6	52.8		9.4	39.4	18.4		9.2	25.7	38.9	B	9.5	16.4	45.1		9.5	40 0.3	24.7	
9.5	10 20.2	55.2		9.2	51.5	25.1		9.2	32.2	17.1	B	8.5	33 0.2	27.1	R	9.4	3.7	21.9	
7.3	23.6	27.6	L	8.3	18 2.0	18.4		9.5	42.2	11.5		9.1	3.9	11.2		9.2	3.9	37.8	
9.5	25.8	10.5		9.0	5.6	13.7		9.3	45.8	17.8		9.5	26.8	18.2		9.4	7.4	8.2	
8.2	45.8	26.6	B	9.4	20.4	2.0		9.0	50.6	38.2	K	9.5	31.1	54.8		9.2	25.5	50.0	K
7.7	47.5	7.0	B	9.4	34.8	13.9		9.5	53.3	7.6		9.5	50.6	33.1		9.5	30.0	0.9	
8.5	11 1.9	17.0		8.5	38.1	42.9	R	9.5	56.6	10.6		9.5	53.4	25.2		9.5	33.7	28.4	
9.2	13.4	7.8		9.1	44.8	15.7		9.5	26 5.4	2.9		9.4	59.3	27.5		9.2	43.9	9.5	B
9.5	19.7	24.9		9.5	45.0	43.2		9.4	8.2	47.6		9.5	34 7.6	43.1		9.3	58.8	51.5	
8.4	34.2	46.0		9.3	45.7	30.3		9.4	11.3	0.5		9.5	15.0	30.5		9.5	41 5.9	52.5	
8.5	36.7	54.9	K	9.5	49.8	57.2		7.5	12.1	6.1	L	9.5	15.4	40.6		9.5	6.0	6.3	
9.5	42.8	7.5		9.4	19 5.6	44.1		9.5	20.1	56.5		9.1	23.6	40.6	R	9.3	28.4	51.3	
8.0	45.3	37.4	K	9.3	12.0	50.7	B	9.5	22.4	52.2		9.5	29.0	45.1		9.4	31.2	14.4	
8.1	50.2	52.7	L	7.6	12.3	55.7	K	9.4	35.0	56.0	B	8.3	35.2	18.9	G	9.5	36.3	7.1	
9.1	53.9	26.3		9.3	14.2	41.0		9.4	49.3	3.9		8.6	44.3	33.7	G	8.6	58.8	57.6	K
9.1	55.1	27.8		9.5	20.5	30.6		9.2	49.8	10.1		9.5	48.1	49.3		9.5	42 1.2	8.4	
6.7	12 11.6	46.6	K	8.2	40.2	29.1	K	9.1	54.7	1.9		9.4	48.3	42.9	B	6.1	19.3	3.4	K
9.5	17.8	13.0		9.5	53.7	9.6		9.0	58.5	30.3		9.3	35 6.2	32.5		9.4	29.0	6.6	
6.7	23.1	52.0	K	8.9	20 9.4	51.3		9.0	59.3	26.3		9.5	13.2	11.0		8.7	36.5	33.2	
9.5	25.2	8.5		9.5	18.8	2.9		9.5	27 15.8	2.2		9.5	26.0	32.1		9.0	36.7	12.0	
8.1	31.7	58.9	K	9.0	24.1	17.5		9.4	22.2	46.0		9.5	26.9	30.0		9.5	56.8	28.5	
9.5	42.0	53.7		9.5	37.9	23.1		9.5	33.3	36.0		9.5	32.2	19.7		9.0	43 2.1	26.0	
9.5	47.5	43.4		9.5	38.7	35.7		9.2	42.3	37.2	B	9.5	37.2	8.3		9.4	7.3	1.3	
8.7	48.2	9.6		9.4	44.2	21.1		9.5	50.2	55.9		9.4	43.4	12.3	B	9.5	11.9	14.0	
8.3	58.8	28.4	B	9.4	50.0	33.5		9.1	51.6	10.5		9.4	45.6	11.0		9.5	21.5	49.6	
8.4	59.8	1.1		8.0	21 5.4	31.3	K	9.3	54.7	47.3		9.4	55.9	21.9		9.0	37.4	38.2	
9.1	13 1.3	35.7		9.4	7.5	55.2		9.5	28 15.0	35.4		9.2	36 9.0	7.3		9.5	39.0	33.5	
9.5	13.2	58.2		9.3	12.6	44.0		9.4	25.6	50.1		9.1	12.8	30.5		8.8	53.1	15.0	K
9.5	18.9	48.6		8.8	19.2	38.0	K	6.6	33.7	27.6	K	8.3	16.3	27.0	K	9.0	56.8	48.1	
9.4	21.1	59.6	B	9.3	23.5	41.0		9.4	34.0	46.6		7.9	17.6	7.5	K	9.3	44 16.9	36.2	
9.3	37.2	20.4		9.5	25.9	51.4		9.5	34.1	16.1	B	8.8	19.0	48.4		6.8	20.3	20.9	K
9.5	48.4	40.9		9.4	37.8	12.9		9.5	34.8	45.6		9.0	33.2	34.1		8.3	36.0	32.9	
9.0	55.2	54.5	K	8.9	47.1	38.7		9.0	45.2	44.9		9.3	35.3	50.2		9.5	44.2	9.4	
9.0	14 7.9	13.0		9.5	54.0	23.9		9.4	49.9	25.4		9.3	36.7	58.6		9.5	44.3	50.4	B
9.5	15.2	40.9		9.5	59.5	26.4		9.0	52.2	31.3	K	9.5	37 10.1	30.8		9.5	45 13.1	11.9	
9.5	16.0	52.7		9.4	22 2.2	48.3		9.5	58.3	1.4		9.5	16.6	11.5		9.5	17.7	28.9	
8.3	20.5	15.7		9.3	2.8	3.3		9.5	29 16.8	11.5		9.5	23.5	51.5		9.5	18.3	31.4	
9.5	31.3	36.1		9.5	11.4	51.0		8.8	36.2	55.0	K	9.4	27.3	6.0		9.4	21.1	30.4	
9.4	44.4	8.4		9.5	25.2	42.9		8.7	38.5	57.2	K	9.4	27.9	8.2		5.5	25.9	21.2	K
9.4	48.5	25.4		8.2	27.0	30.8		9.0	43.3	40.0		9.5	30.8	20.0		9.5	28.5	40.1	
9.5	15 1.3	8.5		9.4	23 16.5	13.7	B	9.5	47.4	6.4		8.8	55.3	5.8		9.0	37.2	15.8	K
9.5	10.2	37.4		9.5	17.2	32.7		9.5	48.7	9.3		8.8	38 1.3	5.0		9.5	44.0	44.0	
8.8	24.7	7.5		9.4	17.6	51.5		9.4	30 0.2	16.2		9.4	2.6	36.2		8.9	51.1	48.2	
8.5	29.2	9.3		9.5	22.3	11.9		9.2	1.0	33.5		6.7	4.5	19.5	G	9.2	51.6	39.2	
9.4	30.9	30.5	B	9.5	25.0	40.0		9.1	26.0	15.9		9.4	8.3	16.0		9.3	56.5	35.2	
8.7	38.3	54.7		9.4	52.8	8.2		9.5	32.1	52.2		9.2	20.8	34.5		9.1	46 7.0	20.8	
9.5	51.5	45.0		9.2	53.7	17.9		9.2	39.2	40.1		9.5	26.7	14.0		9.2	10.2	8.0	
9.5	52.3	42.0		9.0	24 7.6	25.8		9.5	49.2	28.0		9.5	28.3	17.0		9.0	20.6	54.7	K
8.2	59.0	30.9	K	9.5	12.3	23.4		9.5	31 9.6	38.2		9.5	31.0	31.3		8.9	31.1	22.9	K
9.5	16 26.1	27.8		9.5	14.9	8.5		9.5	36.2	58.4		9.1	32.3	1.8		9.0	45.0	42.3	K
9.5	40.8	2.5		9.0	15.4	6.2	K	9.5	36.5	49.9		9.2	34.4	0.0		9.4	56.6	40.6	
9.5	51.5	45.1		9.2	21.5	32.5		9.5	37.8	55.7		8.8	38.3	2.0	B	9.5	47 6.2	1.3	
9.0	56.0	53.2		9.1	29.0	55.5		9.0	39.2	12.0		9.5	38.6	57.3		8.9	20.1	55.4	
9.5	56.9	49.0		9.4	37.2	20.0		9.2	42.0	23.6		9.5	39 9.1	4.6		9.5	24.6	0.4	B
9.5	59.8	8.5		9.5	44.6	48.8		9.4	45.6	50.0	B	9.5	14.7	23.6		8.2	33.3	27.0	G
9.4	17 9.7	29.0		9.3	49.1	50.6		6.5	51.4	3.5	K	9.2	16.0	53.5		9.0	42.2	54.0	
8.6	23.5	6.7		9.5	55.5	44.0	B	9.4	54.8	46.5		9.2	18.2	48.1		8.0	44.3	17.9	S
9.2	26.2	34.0		8.5	25 17.5	46.8	B	9.1	32 10.2	24.4	B	8.5	20.0	56.5	K	9.5	44.3	57.8	
9.5	39.2	35.9		9.0	19.7	59.6		6.8	12.5	16.2	G	9.5	58.3	17.4		9.3	51.3	2.6	

3801—3860				3861—3920				3921—3980				3981—4040				4041—4100			
	19ᵘ	+38°			19ᵘ—20ᵘ	+38°			20ᵘ	+38°			20ᵘ	+38°			20ᵘ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.0	47 53.2	23.1	G	9.5	55 19.0	1.2		9.5	3 57.4	52.3		9.5	11 29.5	10.7		8.6	16 55.3	41.1	
9.0	48 5.0	51.3		7.2	23.5	48.1	L	9.0	4 9.5	12.8		9.5	44.5	46.0		9.4	55.9	33.5	
9.5	6.0	5.4		9.1	25.4	52.1		9.5	25.4	59.3		9.5	52.2	22.0		9.0	17 2.4	15.4	
9.5	24.9	0.8		9.5	40.6	9.1		9.3	26.1	24.6		9.5	56.2	23.0		9.4	4.1	26.6	
9.5	34.0	5.9		8.3	51.3	19.3	K	9.4	30.0	44.6		9.5	56.9	55.5		9.4	11.1	6.2	
9.5	37.9	50.8		9.5	56 3.4	15.8		9.5	34.1	24.6		9.5	12 5.0	56.5		9.5	11.1	47.3	
9.4	39.3	1.4	B	9.5	16.1	7.2		6.8	38.1	42.6	K	9.3	11.4	35.5		9.5	17.8	36.0	
9.5	41.5	52.0		9.3	17.8	37.3		9.3	41.3	20.7		9.4	16.7	6.7		9.5	22.5	0.3	
8.2	45.2	43.8	K	7.7	34.3	20.0	K	9.5	58.7	4.9		9.4	18.5	47.0		9.4	34.9	17.1	
8.2	49 12.8	6.1	K	9.5	35.3	6.0		9.5	5 0.8	45.1		8.4	22.5	29.2	K	8.9	36.5	44.6	K
9.5	16.7	55.2		8.5	48.4	15.6	K	8.5	1.7	39.2	K	8.8	25.0	9.3		7.0	41.0	44.7	K
9.3	21.9	20.9		9.5	58.1	24.5		9.5	14.6	26.9		9.1	25.7	47.2		8.9	44.3	17.4	
9.3	25.1	28.8		9.5	58.9	7.2		9.3	28.9	34.6		9.5	26.3	53.1		9.0	44.8	52.7	
9.5	50 12.6	25.8		9.0	57 1.3	56.1		9.5	35.3	53.9		9.0	27.4	5.0		9.5	52.4	41.7	
9.5	28.8	43.6		9.2	8.8	52.6		9.5	39.7	3.3		9.5	37.2	55.8		9.5	18 4.2	33.6	
8.6	36.4	13.5	K	9.0	9.4	32.6	K	9.5	39.9	31.7		9.0	39.3	20.2		9.4	4.7	30.5	
5.5	41.3	6.2	K	9.4	14.7	5.4		9.5	49.5	58.0		8.5	50.4	16.0		8.9	7.7	28.3	K
9.0	56.5	21.9		8.8	37.5	30.4		9.5	56.5	47.6		8.5	51.6	21.8		9.5	12.9	52.4	
9.0	58.2	35.2		9.2	41.7	5.4		7.5	6 11.2	23.4	G	9.0	57.5	12.0		9.0	16.3	25.0	K
9.3	59.4	28.5		9.1	41.7	2.1		7.4	24.1	26.8	G	8.8	13 12.2	25.3		9.5	16.8	36.7	
9.2	51 20.1	12.2		8.8	46.6	45.2		8.3	31.4	14.7	G	9.4	15.4	48.6		9.3	20.3	21.7	
9.4	30.5	16.4		9.5	55.3	56.0		8.2	37.4	16.0	G	8.8	30.1	57.2		9.4	24.9	2.4	
9.0	30.6	9.2		9.3	58 1.3	36.2		9.4	48.7	24.2		6.8	41.7	32.8	G	8.9	30.1	1.8	K
9.5	33.2	38.6		8.5	15.8	38.2		9.3	48.7	33.1		9.5	49.4	46.0		9.3	31.1	50.0	
9.5	53.3	30.0		9.5	16.6	59.2		9.3	54.3	37.1		9.5	50.9	27.5		9.5	33.9	0.1	
9.3	53.7	1.3		9.3	20.0	29.3		6.9	56.4	0.6	B	7.5	53.7	49.0	G	9.3	34.5	44.7	
9.5	55.3	19.9		9.5	24.0	58.2		9.3	7 23.5	15.7		9.5	14 0.3	30.9		9.5	39.7	3.5	
9.5	58.8	52.2		9.5	35.0	13.2		8.9	25.1	35.1		9.4	12.6	21.8		9.5	40.2	5.9	
9.5	52 1.7	43.4		9.5	35.2	21.0		9.1	25.8	36.3		9.5	13.4	2.0		9.0	40.3	2.7	K
9.1	1.9	30.0		9.5	59 9.0	29.4		9.3	27.1	8.6		8.7	13.4	16.6	G	9.4	40.4	37.8	
9.0	7.5	39.9	B	9.4	23.6	43.9		8.8	45.4	32.3		9.5	13.5	25.3		9.0	43.6	4.3	K
6.8	17.2	4.3		9.2	34.1	25.6		8.8	48.0	2.3	K	9.0	15.4	35.7		9.2	45.0	1.6	
9.4	17.7	6.5		8.5	38.3	55.5	K	9.0	8 0.8	38.0		9.2	21.6	51.3		9.5	19 5.5	1.3	
9.5	18.3	21.7	B	9.5	48.3	19.8		9.0	1.6	10.1		9.5	21.7	39.3		8.1	6.8	29.8	B
9.5	24.0	6.4		9.4	52.9	17.2		9.2	3.6	26.6		9.2	25.7	45.9		9.0	6.9	21.0	
8.0	27.3	0.8	B	6.8	52.7	3.7	B	7.2	7.3	19.9	K	9.0	27.8	8.3		9.1	8.5	30.6	
8.5	30.1	57.0	K	9.2	57.1	44.2		8.2	7.4	17.4	K	9.5	49.2	31.0		9.5	30.1	24.4	
9.5	45.0	26.6		9.0	57.9	32.1		8.4	11.3	2.6	K	9.5	49.4	12.4		9.5	33.0	29.6	
8.4	46.8	17.0		9.5	0 8.6	43.9		9.5	11.3	49.5		8.5	52.5	22.6	K	9.4	20 14.2	25.5	
9.5	49.4	42.7		8.4	18.0	56.4	K	9.4	20.4	16.6		9.4	53.0	53.8		9.5	35.6	45.5	
9.4	59.5	48.6		9.5	30.2	58.0		9.4	38.0	57.2		6.8	15 0.1	57.0	S	7.9	50.3	23.2	K
9.4	53 4.5	11.3		9.4	30.7	40.2		9.5	40.0	58.3		9.4	2.9	55.5		9.4	56.0	47.2	
9.5	5.8	8.0		9.5	47.1	27.6		7.5	41.6	42.9	K	9.5	3.4	2.8		9.5	57.5	45.1	
9.0	7.4	49.5		9.5	53.7	40.2		9.0	9 3.8	2.9		9.5	3.4	52.9		9.5	58.2	56.8	
9.3	17.1	1.1		8.3	1 8.0	10.5	L	9.0	22.0	28.8		9.4	5.4	14.1		9.5	21 0.2	48.3	
9.5	22.6	57.8		6.7	12.7	40.4	G	9.2	22.1	2.4		9.2	6.1	30.7	K	9.5	7.4	12.0	
9.1	24.5	12.1		9.2	28.1	8.0		9.3	27.6	8.1		9.5	19.0	51.3		9.0	26.9	33.4	
9.2	52.6	7.1		9.2	32.5	56.9		9.0	31.4	0.8		9.1	29.3	54.5		8.0	29.4	58.9	K
9.4	56.0	30.6		8.5	43.6	25.7		9.5	40.4	15.5		9.4	33.6	51.0		9.5	35.2	55.9	
7.6	54 2.0	28.9		8.9	2 6.7	3.7	K	9.5	54.3	19.7		8.8	38.2	6.2		9.2	36.3	27.2	
9.3	3.5	17.5		9.1	11.0	28.9		7.9	55.1	10.1	K	9.4	42.9	32.8		9.5	47.7	41.3	
9.5	13.4	11.9		9.5	17.0	30.5		9.0	10 7.3	37.1		8.0	49.1	34.1	K	8.4	51.0	24.3	K
9.5	18.3	19.1		7.9	20.0	12.7	K	9.0	7.4	35.1		9.4	16 2.4	53.5		9.5	52.1	25.6	
9.3	18.8	13.9	B	9.0	26.1	26.9		9.2	11.2	39.9		9.4	16.3	9.0		9.4	55.0	8.3	
9.3	38.2	23.2		8.2	30.1	2.2	K	9.5	30.2	35.4		8.7	24.7	59.1	K	9.0	58.2	56.4	
9.5	42.9	14.7		9.5	53.3	55.0		9.5	47.3	5.7		8.8	31.4	10.0		9.3	58.5	25.7	
9.5	46.2	6.4		8.5	59.2	23.2	K	6.5	48.6	27.2	K	8.9	38.0	49.1		9.4	22 11.9	33.5	
9.5	53.4	50.1		9.3	3 3.6	43.2		9.3	11 4.3	56.8		9.2	40.2	59.9	K	9.1	12.9	17.5	K
9.5	54.3	54.3		9.0	4.0	58.1		9.5	9.8	37.6		9.5	45.1	27.1		9.3	15.8	21.9	
8.5	59.7	22.9	K	9.5	41.7	39.7		8.1	23.1	27.2	K	9.5	51.5	5.9		9.3	49.6	42.2	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵘ	+38°			20ᵘ	+38°			20ᵘ	+38°			20ᵘ—21ᵘ	+38°			21ᵘ	+38°	
m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	m		′ ″	′	
8.9	22	51.5	43.8	9.5	30	55.8	20.1	9.0	39	52.3	22.6	K	9.2	50	3.7	24.7	8.2	0	16.0	44.8	K
7.4	23	6.4	50.6	L	8.0	31	1.8	41.3	K	9.5	40	1.6	35.1		7.7		4.9	20.8	L	9.5		20.1	6.8	
8.6		8.9	53.6		8.7		20.1	35.9	K	9.5		1.8	41.5		9.2		5.4	28.1		5.0		24.5	2.5	S
9.1		10.3	40.2		9.5		23.5	8.4		9.5		6.0	59.4		9.5		22.8	34.8		5.3		26.0	2.4	L
8.5		22.5	42.3	R	9.4		36.4	35.7		9.5		17.4	56.6		9.4		25.9	46.0		9.4		35.0	0.2	B
8.6		24.5	59.6	K	8.3		38.0	7.1		9.5		25.3	20.1		9.2		36.8	26.7		9.5		38.9	24.3	
9.5		31.0	39.7		9.5		40.7	40.2		8.0		34.4	17.7	K	9.4		38.5	23.0		9.5		41.6	55.7	
9.2		34.7	49.9		8.5		46.5	26.9		9.5		53.6	43.6		9.5		44.3	55.9		9.5		46.4	20.1	
9.1		39.0	42.3		8.3	32	0.6	59.4	K	9.5		58.3	55.9		8.9		46.8	48.6	K	9.4		51.2	10.5	
9.5		46.1	55.4		9.5		29.4	46.7		9.1	41	13.8	38.6		9.5		52.8	13.9		9.5		59.4	18.4	
8.5	24	6.7	27.9		8.4		45.2	2.4	R	9.5		15.4	14.4		9.5		58.7	15.2		9.5	1	22.1	4.2	
9.0		8.4	59.3	K	7.0	33	11.5	8.2	K	9.5		23.0	56.8		9.3	51	3.6	24.7		9.1		28.9	38.8	R
9.1		9.4	5.8		9.2		13.8	21.4		9.5		41.2	23.8		9.0		14.5	20.8		8.4		33.7	54.9	K
8.3		12.0	7.5		9.1		30.2	44.7		9.0		54.4	16.4		9.5		26.1	48.2		9.4		41.1	6.5	
9.2		12.9	52.3		9.1		43.6	40.0		6.7	42	31.6	45.4	K	9.3		34.1	0.5		9.2		50.4	17.4	
8.8		13.1	27.5		9.5		49.0	29.8		9.5		31.7	5.6		9.5		49.0	42.5		8.9		50.8	58.3	K
9.4		13.7	30.1		8.6		50.0	18.6		9.5	43	12.6	10.4		9.5	52	20.3	14.6		9.3	2	9.6	48.7	
9.5		32.6	8.4		8.5	34	3.3	59.2	K	9.3		15.8	3.5		9.3		24.7	0.8		9.5		16.1	5.5	
8.7		36.0	3.3		9.5		13.1	0.9		7.7		30.3	20.0	K	9.5		26.7	29.7		9.5		18.2	11.2	
9.1		41.9	49.8		9.4		15.6	37.3		7.9		40.6	45.1	L	9.3		34.0	44.8		9.5	3	5.4	18.3	
8.4	25	1.3	4.4		8.1		27.9	14.6		9.1		49.8	56.5		7.4		54.2	55.0	K	9.5		10.5	31.8	
9.1		4.8	27.1		9.3		40.5	42.9		9.5	44	4.5	12.1		9.5	53	12.4	41.2		7.8		29.2	8.4	L
8.8		7.8	22.2		8.0		53.1	15.7		9.4		4.8	18.8		9.5		14.1	5.7		9.1		29.2	10.4	
8.9		10.7	29.8		8.6		58.6	23.4	K	8.4		16.5	1.0	K	9.4		35.6	25.7		9.0		42.0	43.2	
9.0		13.6	47.5		9.5	35	8.1	2.3		9.4		17.2	4.0		9.5		59.4	59.8		9.3		42.3	35.8	
9.5		33.1	3.0		9.5		25.9	18.6		9.1		43.7	39.8		6.5	54	8.3	15.1	G	9.3	4	1.8	36.0	
9.0		46.5	8.0		6.5		35.2	33.8	K	9.5		52.5	0.7		9.4		15.6	24.7		9.0		5.5	20.9	
9.5		53.3	25.5		8.9		42.5	9.5		9.5	45	12.0	0.2		9.5		30.3	2.2		9.3		34.2	8.7	
9.5		57.2	0.7		9.5		51.8	48.4		9.0		24.3	53.3		9.1		38.1	4.9	K	9.3		47.2	15.8	B
9.1	26	0.7	58.2		9.5		56.0	37.2		9.4		33.6	9.6		9.5		40.3	53.3		9.0		47.7	9.6	
9.4		0.9	15.0		9.5	36	1.2	24.6		9.2		38.6	45.9		9.5		49.0	42.2		9.4		53.8	32.6	
9.4		10.4	50.4		9.5		2.6	28.9		9.5		39.3	19.0		9.3	55	10.6	24.7		7.8		59.5	22.2	K
9.5		17.4	2.2		9.3		4.0	56.8		9.5		43.4	17.5		9.4		21.8	34.3		8.5	5	3.3	14.0	K
9.3		31.4	51.0		9.4		16.6	35.0		8.0		58.2	50.8	K	9.5		37.9	18.5		8.7		10.9	37.5	
8.9		32.6	7.7		9.4		18.5	48.1		8.9	46	10.4	51.0	K	9.4		50.2	11.8		8.4		17.2	11.0	K
9.2		43.2	28.3		9.1		44.8	1.1		8.7		34.1	2.3		9.1		52.5	20.8	K	9.4		20.0	42.2	
8.7		59.5	41.9		8.3		57.4	6.8	K	8.6		39.2	21.9		9.1		53.3	59.1		9.5		32.4	19.5	
8.2	27	22.9	46.9	K	9.5	37	10.7	59.5		7.3		45.7	57.2	K	7.2	56	16.0	41.2	K	9.1		35.2	49.1	
8.8		24.5	43.7	K	9.5		23.2	59.1		9.2	47	3.9	34.4		9.5		27.9	39.5		9.2		35.8	31.0	
9.5		32.4	52.7		8.8		29.0	29.9	K	8.0		12.4	15.6		9.5		45.7	56.1		8.7		37.4	39.1	K
9.0		45.0	42.1		9.4		30.4	19.3		9.4		15.1	22.5		6.4		47.7	55.8	K	9.0		46.0	3.6	
9.0		50.7	41.3	K	9.4		37.0	0.6		9.5		35.4	17.0		9.4	57	9.6	25.1		9.4		49.4	17.9	
9.3		52.0	9.4		9.5		40.5	57.5		8.3		51.5	47.9		8.6		12.9	0.1	B	9.5	6	9.8	55.4	
9.0		52.8	52.1		9.5		53.4	16.6		9.5	48	1.8	36.3		9.4		16.8	32.9		9.5		17.7	0.6	
9.5		55.6	26.1		9.0		59.3	21.4		9.4		4.4	6.4		6.0		28.1	5.0	K	9.5		19.3	53.9	
9.4	28	3.1	14.3		9.5	38	4.4	2.0		9.5		28.0	29.6		9.5		48.3	54.1		8.5		22.1	1.5	L
9.3		11.5	43.2		9.1		16.0	22.7		9.5		36.0	28.9		9.5		59.1	6.8		8.9		33.8	34.1	K
8.0		19.0	5.3	K	7.4		25.3	56.3	K	9.5		45.1	25.4		9.5	58	1.1	46.3		9.5		46.4	25.4	
8.5		20.1	20.3		9.4		29.0	39.8		9.5		47.0	29.8		9.5		5.2	23.2		8.7		48.1	44.9	K
8.0		29.4	11.7	K	9.1		33.6	7.3		9.5	49	0.4	50.1		9.4		8.7	31.2		9.1		48.8	59.2	
9.5		55.7	24.6		9.4		40.5	55.8		9.5		6.1	26.4		9.3		27.5	18.6		9.4		53.2	10.1	
9.5	29	12.3	51.0		9.5		48.9	35.5		9.2		13.6	7.3		9.2		40.0	43.8	R	9.4		54.3	45.1	
9.0		18.1	56.3		9.5		50.2	2.0		9.2		13.9	35.3		9.4	59	3.8	33.2		9.5	7	2.9	28.5	
9.5		26.3	20.9		9.3		51.0	48.9		9.5		18.2	59.1		9.5		6.0	22.6		9.5		7.8	33.1	
8.8		27.9	19.3		9.5	39	6.4	49.7		9.5		21.4	17.8		9.0		15.1	46.8	R	9.0		8.2	30.6	K
9.5		34.6	37.3		9.5		21.8	39.6		9.1		27.7	41.1		8.8		15.2	10.5		9.5		15.6	24.7	
9.4		49.0	56.4		9.1		25.6	7.4		8.0		33.7	39.6	K	9.0		27.8	32.9	K	8.1		20.5	22.2	K
9.4	30	18.6	37.6		9.5		36.5	51.3		9.5		44.4	50.1		9.4		27.9	39.5		9.5		26.2	11.6	
9.5		39.0	8.4		8.9		46.2	31.6		9.1		47.8	38.0	K	8.9		58.9	36.9	K	8.7		30.0	41.0	
8.8		48.4	59.7	K	9.5		48.2	7.2		9.4		51.7	7.1		9.1	0	9.8	54.2		9.5		38.2	19.1	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	21ᵘ	+38°			21ᵘ	+38°			21ᵘ	+38°			21ᵘ	+38°			21ᵘ—22ᵘ	+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	7 40.4	20.9		9.5	15 20.6	3.5		8.9	26 20.6	3.4		9.0	36 15.0	23.5		9.5	51 23.1	50.3	
9.4	46.7	29.9		9.4	21.1	7.5	B	9.5	21.3	10.4		7.5	19.9	51.9	K	9.4	38.2	21.0	
8.8	58.3	12.4		9.5	24.3	41.3		9.5	22.3	53.8		8.7	27.5	35.8		7.6	52 1.4	13.7	K
9.2	8 4.1	5.5		8.8	25.3	18.6	K	9.5	28.0	36.0		9.1	34.2	32.6		9.3	9.3	1.6	B
8.3	14.1	46.5		9.5	29.0	59.9		9.3	40.0	23.5		8.5	37 1.8	54.5	K	9.5	22.3	7.8	
8.9	23.4	59.7	K	9.5	16 2.9	18.6		8.8	54.6	13.9		9.5	20.0	17.7		9.5	32.0	6.7	
9.5	27.1	4.7		9.5	29.0	35.8		8.3	58.5	25.7	L	9.5	22.9	18.7		9.5	33.5	18.5	
9.1	34.2	31.4		8.6	46.4	8.4	L	9.0	27 27.0	3.6	B	9.5	27.2	3.5		9.5	34.0	24.0	
7.1	42.8	38.6	B	9.2	55.9	14.9		9.3	32.8	7.8		9.5	30.4	9.8		9.4	38.0	15.8	B
8.5	49.2	9.4	K	9.1	59.0	52.2		9.1	45.0	40.1		9.1	38 8.3	58.2		9.5	53 8.1	45.9	
9.4	56.9	39.3		7.0	17 0.2	1.0	L	9.3	46.7	26.3		9.5	11.2	23.5		8.7	16.4	5.6	R
9.5	57.5	23.2		7.5	6.5	5.3	L	9.3	52.0	11.2		9.5	16.0	11.1		9.0	50.0	1.3	K
9.5	9 4.9	53.6		9.4	8.9	15.2		9.2	28 7.3	4.7		9.0	26.2	34.9		8.9	55.9	31.3	K
9.3	6.4	24.7		9.5	28.8	31.2		9.3	10.9	27.0		9.3	29.3	22.1		9.4	54 28.5	57.2	
8.8	10.1	52.8	B	9.5	28.9	35.6		9.4	12.2	53.7		9.1	30.5	52.4		7.3	47.8	50.7	K
9.5	12.3	15.1		7.8	32.6	43.8	B	9.4	14.0	11.0		9.5	47.6	56.6		6.8	55 0.2	33.7	K
9.4	29.0	2.7		9.3	49.7	20.4		9.1	38.1	13.7		8.7	52.8	51.3	K	8.9	23.9	16.8	
9.4	30.1	46.7		9.5	56.1	40.4		9.5	45.2	32.7		9.5	39 10.0	32.1		9.4	31.2	18.2	
9.3	36.5	20.8		9.4	59.9	27.3		8.5	53.8	52.2	B	9.5	20.6	12.5		8.3	38.9	30.3	K
9.2	54.0	41.3		9.2	18 1.6	31.5		9.4	54.3	24.8		9.3	40 9.5	45.5		9.3	45.3	35.4	
9.5	56.9	38.8		8.7	16.2	32.2	B	9.5	29 1.5	48.6		8.8	17.6	51.8		9.5	50.6	41.0	
9.5	10 6.6	2.6		9.3	44.8	0.7		7.6	6.8	47.5	K	9.3	26.9	48.7		9.3	55.9	35.8	
9.2	21.2	1.8		9.5	55.4	39.3		8.8	14.6	34.1		9.4	48.3	24.6	B	9.5	56 6.6	10.2	
9.5	30.8	37.2		9.5	56.3	16.4		9.5	18.1	56.6		9.4	58.2	31.4		9.4	16.8	57.4	
9.5	31.5	31.1		9.2	19 3.4	12.6	R	9.1	18.3	0.0		9.0	59.1	45.8		9.3	28.3	20.7	
9.4	37.4	19.5		8.2	4.3	25.0	K	9.5	42.4	12.5		9.0	41 2.4	35.3		9.2	39.4	54.9	
8.0	38.7	29.4	L	9.5	13.2	44.9		9.5	30 0.7	46.7		8.9	5.6	17.3		7.9	43.4	45.5	L
9.1	47.5	20.5		9.5	22.8	55.4		9.5	15.0	35.6		9.5	30.0	32.8		7.5	47.9	52.4	L
9.5	47.6	4.4		9.5	27.2	4.6		9.5	15.6	40.8		9.5	42 0.9	12.8		9.5	57.4	6.5	
9.5	55.1	5.1		9.4	30.4	13.9	B	8.0	19.2	7.9	K	9.4	4.8	31.0		9.2	57 0.2	44.0	B
4.5	11 43.6	47.3	L	9.2	34.1	19.3	B	8.0	41.4	49.8	K	7.7	20.1	16.6	K	9.2	22.4	55.0	
7.0	53.8	36.1	L	9.5	36.0	18.3		8.9	43.6	30.0		7.7	36.3	24.9	K	9.3	58 25.8	11.2	
8.8	58.3	15.1	K	8.3	40.6	48.7		9.0	49.1	11.7		9.1	43 20.4	56.4		9.4	32.7	21.4	B
9.4	59.8	1.7		9.1	56.7	38.6		9.3	52.2	22.3		8.2	28.9	19.7	G	9.2	36.4	11.2	
9.2	12 14.8	35.8		8.7	20 10.4	8.5	K	9.5	31 15.2	49.0		9.1	57.9	33.4		9.3	56.2	11.0	
9.3	20.9	19.0		9.4	31.0	46.3		9.5	45.1	44.3		9.3	44 6.1	59.6		9.0	56.4	40.7	K
9.1	22.7	17.8	B	9.0	36.9	31.2		9.5	52.3	4.3		9.5	16.2	17.7		7.8	57.9	46.8	K
9.4	23.7	14.1		9.1	48.3	10.5		6.4	55.4	39.6	G	8.0	27.5	44.9	G	7.5	59 7.4	57.8	K
8.5	28.5	44.2		9.0	50.4	18.7		9.4	32 2.0	2.8	K	8.3	54.4	56.2	K	8.8	11.7	13.4	K
8.9	52.4	19.5	K	9.4	58.1	56.9		8.7	10.3	16.6	K	9.3	45 6.3	15.0		9.5	36.9	26.5	
9.3	53.2	28.6		8.7	21 13.7	42.7		8.7	11.7	20.3	K	6.5	7.0	51.7	K	8.3	0 7.4	55.5	K
8.7	13 14.8	32.9	K	9.2	24.8	34.8		9.5	26.7	38.6		9.0	9.9	27.4		8.9	17.8	59.9	K
9.5	16.3	15.6		9.5	26.4	12.6		8.3	37.7	51.2	K	9.5	14.6	59.8		9.4	25.7	28.7	
9.4	22.1	48.5		9.0	22 17.4	51.1		8.9	58.3	16.2	K	9.5	44.7	16.1	B	9.5	37.9	34.6	
7.3	34.9	11.8	K	9.5	53.2	40.8		9.5	59.0	11.1		7.7	59.4	16.1	L	9.3	39.8	6.0	
9.5	45.2	51.5		9.5	54.8	43.0		9.5	33 4.6	40.7		8.4	46 12.7	13.7	L	9.5	56.6	8.7	
9.5	46.4	47.5		9.5	23 1.2	32.7		6.5	58.7	51.2	K	9.5	23.6	41.7		9.5	1 29.7	5.4	
8.9	52.1	11.5	K	9.5	14.3	24.5		9.5	34 4.5	54.3		9.4	33.2	32.7		9.5	35.0	11.9	
9.5	14 0.2	4.5		8.3	35.4	1.1	K	9.4	21.3	4.3		9.5	37.6	24.4		8.0	35.4	37.4	K
9.4	2.2	54.9		9.4	39.0	59.0		9.5	21.6	21.3		7.2	46.9	8.8	K	9.5	37.3	1.1	
9.5	11.8	18.2		9.5	57.4	25.3		9.5	35.2	17.4	B	9.4	56.2	4.0		9.3	2 8.3	46.2	
9.2	21.7	41.2		9.1	24 29.9	20.6		9.4	42.5	50.2		9.5	47 2.7	53.0		9.3	19.6	47.3	
9.5	24.8	32.9		9.3	44.9	8.5		9.1	50.3	41.1		9.4	59.6	44.5		7.7	21.2	40.3	K
8.5	27.3	4.7	K	9.5	54.6	54.7		8.5	57.7	22.3	K	9.5	48 6.6	59.3		8.5	33.5	42.1	K
9.0	29.9	2.4		9.5	25 2.4	33.5		9.5	35 17.0	8.7		9.5	40.9	32.7		9.5	57.6	33.1	
9.5	39.1	46.2		9.5	3.6	25.8		7.8	25.1	48.7	K	8.5	53.5	1.3	R	9.5	3 11.8	8.9	
9.0	50.1	14.6	K	9.4	20.4	37.3		9.5	34.9	31.2		9.1	49 11.0	54.5		9.3	4 3.2	1.9	B
9.3	15 5.8	2.2		8.0	21.1	7.6	K	9.5	35.6	17.0		8.7	28.7	7.2		9.0	32.4	54.3	
9.4	10.1	26.1		7.8	50.4	29.3	K	9.5	52.3	53.4		9.0	40.6	23.7		9.4	49.7	33.1	B
9.5	19.9	8.5		9.5	50.8	12.5		9.5	56.8	14.4		8.8	51 22.6	41.7		9.4	5 8.0	20.0	

4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
22ᵘ		+38°		22ᵘ		+38°		22ᵘ		+38°		22ᵘ—23ᵘ		+38°		23ᵘ		+38°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.2	5 10.8	59.7	K	9.3	19 17.2	26.7		8.9	31 57.5	1.9	K	9.3	44 51.2	29.4		9.4	2 17.4	19.2	B
9.4	16.7	34.4		8.7	21.6	4.3		9.5	32 7.6	17.3		9.5	45 2.4	24.2		9.0	20.3	54.5	
8.2	41.8	19.3	K	9.0	25.7	28.7		9.1	10.1	7.7	K	9.1	12.3	21.8		9.5	36.5	49.5	
9.5	56.0	55.8		9.2	45.8	20.8		9.4	24.0	3.1		8.5	12.5	57.4		9.0	51.1	34.2	
9.5	6 12.2	24.1		9.5	20 2.1	39.9		9.5	30.9	50.8		9.4	19.4	3.7		6.8	3 5.0	40.2	K
9.3	22.1	32.7	B	9.5	3.2	20.7		5.0	46.1	18.3	K	9.4	31.7	1.6		9.5	50.2	29.4	
8.7	29.5	3.5		9.4	4.3	11.5		9.5	33 1.2	40.4		9.3	48.2	14.1		9.5	4 31.9	35.6	
9.4	33.4	58.5		9.3	17.9	51.2	B	9.3	13.6	34.5		9.5	46 45.7	25.0		9.5	56.6	23.5	
8.9	39.0	21.3		9.5	22.8	57.2		8.6	15.1	26.3		9.4	50.4	1.6		9.5	6 12.7	50.2	
8.0	7 10.2	30.3	K	9.5	28.2	30.0		9.1	18.8	4.8		9.4	51.5	17.6		9.4	33.5	29.6	
4.9	40.1	59.8	K	8.0	46.2	54.9	L	8.5	21.4	57.4		9.5	47 11.2	34.9		9.1	34.5	15.0	
9.5	8 1.7	15.8		9.0	48.1	15.2		9.5	29.4	23.6		9.4	30.2	19.4		9.4	35.3	35.9	
9.5	11.9	53.9		9.5	53.9	24.4		9.0	33.6	10.1	K	9.5	31.3	12.9		9.5	42.0	57.0	
9.0	17.5	40.8		9.0	21 20.2	17.3		9.2	41.7	12.8	K	9.4	48.7	0.1		9.5	43.6	36.4	
9.4	18.6	47.0		9.1	45.4	34.5		9.4	54.2	40.1		9.5	50.2	51.7		9.5	44.2	38.6	
9.5	29.7	40.2		9.2	58.6	31.3	B	9.4	34 8.5	1.3		9.1	48 23.9	55.0	B	8.4	44.5	27.4	K
9.4	46.4	50.9		9.1	22 20.7	36.0		9.5	10.9	28.8		9.1	49 9.6	51.5		8.8	52.5	43.9	K
9.0	9 17.1	39.3	B	9.5	34.7	14.2		9.5	15.3	5.8		9.3	12.3	55.0		9.4	7 11.4	53.8	
9.4	19.0	48.2		9.2	47.8	55.4		9.3	27.0	5.3		8.7	37.5	9.5		9.5	42.7	57.8	
9.4	28.3	20.1		9.4	23 24.5	47.7		9.1	42.2	48.3		9.5	55.3	42.9		9.5	8 10.1	5.7	
7.8	38.0	8.2	B	9.4	32.3	31.9	B	9.5	46.7	10.7		9.3	55.9	33.6	K	9.2	21.2	0.6	
9.3	10 25.4	57.2		9.3	24 1.5	35.6		9.5	47.3	49.4		9.5	50 15.6	48.2		9.2	45.6	21.8	
9.3	27.6	0.6		8.8	12.7	48.4		9.5	50.4	11.4		7.6	56.3	37.0	K	9.4	9 13.0	8.2	
9.1	11 8.8	0.4		9.0	17.9	36.0		8.7	53.1	3.2	K	6.5	51 1.4	33.8	K	9.5	21.2	53.9	
9.1	13.4	49.3		9.4	19.7	38.5		9.5	35 10.0	12.1		9.5	52 34.8	53.8		8.4	28.5	10.2	L
9.2	16.1	21.5		8.8	48.1	51.6	K	9.5	26.2	28.3		9.5	53 16.7	1.3		9.1	55.3	10.9	L
7.3	32.6	18.0	K	8.5	53.9	29.8	K	9.5	57.0	3.5		9.4	35.3	48.0		9.1	10 6.9	50.4	
8.9	34.5	9.4		9.3	25 13.3	13.5		8.9	57.6	32.8		9.4	42.9	50.9		9.5	8.9	21.0	
9.3	38.7	27.7		9.4	26.8	29.3		8.5	36 30.5	0.3	L	9.3	45.4	35.3		9.5	12.4	41.4	B
9.1	46.9	43.6		9.2	38.8	42.5		9.0	37.3	25.7		9.5	54 47.3	53.0		9.5	16.8	6.9	
9.3	12 16.2	15.6		9.4	39.0	11.7		9.5	45.6	1.8		8.5	55 8.4	19.1	K	9.4	21.1	1.0	
8.3	22.6	20.1	K	9.1	44.8	7.4		8.9	37 6.4	53.7		9.5	27.0	6.7		9.5	27.5	52.3	
9.2	36.5	42.8		9.4	45.6	2.2		9.5	9.2	7.2		9.5	44.7	45.3		9.4	11 45.2	29.3	
9.4	37.8	1.9		9.5	26 16.2	51.2		9.3	9.8	43.1	B	9.2	48.1	16.3	K	9.4	48.3	45.6	
9.5	48.2	6.2		9.3	26.3	23.9		6.3	32.9	43.2	K	9.0	56 1.7	25.0	B	9.5	12 0.1	20.6	
9.3	49.3	22.2		9.4	43.2	55.7		9.5	54.2	6.5		9.3	2.7	23.7		9.5	14.4	23.9	
9.1	13 6.0	10.9	B	8.0	58.4	50.1	G	9.4	38 19.1	4.6		9.5	3.8	34.0	B	9.5	41.7	59.2	
9.5	16.0	9.5		9.1	27 26.8	20.3	B	7.0	20.4	27.0	K	9.5	42.8	10.1	B	9.4	42.5	24.2	
9.0	20.1	53.0	K	8.9	34.3	24.3		9.2	44.7	48.4		9.5	50.3	36.0		9.0	43.6	8.6	
9.4	21.0	10.3		9.5	38.0	53.2		8.5	59.9	19.5	K	9.5	57 28.9	52.8		8.0	48.7	29.8	K
9.4	24.5	14.8	B	8.5	41.5	35.3	K	9.5	39 28.6	28.4		9.3	37.9	6.9		9.5	13 45.2	7.3	
9.4	26.2	19.5		9.4	45.7	20.8		9.3	37.2	58.3		9.5	40.6	11.3		9.0	54.6	57.4	K
9.5	38.6	55.7		9.4	28 13.6	39.8		9.4	40 0.5	47.1		9.4	58 8.1	19.7		9.5	14 41.3	13.2	
9.5	52.1	26.7		9.2	14.5	0.3		7.3	22.3	38.9	K	9.5	9.7	48.8		9.5	15 10.0	48.4	
9.0	14 17.4	35.2		9.3	22.5	26.7		9.3	41 18.1	29.0		9.1	18.8	28.7		9.4	29.9	57.8	
9.3	29.7	12.9		8.8	24.4	0.3		9.3	30.6	31.2		8.5	43.2	17.0	K	9.3	43.8	19.8	
9.3	15 13.0	6.9		7.9	29 1.7	50.2	K	8.0	31.2	30.4	K	9.5	46.6	41.5		9.2	59.7	58.3	
9.5	52.7	4.8		5.7	26.3	53.0	K	9.3	42.0	5.2		9.2	53.7	31.5		8.7	16 2.5	12.4	K
9.0	16 17.6	20.4	K	9.3	27.6	34.2	B	9.3	44.4	51.4	B	9.5	55.8	4.4		9.3	7.1	55.4	
8.6	28.4	54.6		9.0	29.4	51.2	K	9.4	45.1	12.5		9.5	59 54.3	51.1		8.7	12.3	22.3	K
9.5	44.2	44.9		7.6	44.8	35.5	L	9.5	42 2.1	51.9		9.5	58.4	56.4		9.5	49.9	57.3	
9.4	57.7	22.5		9.3	30 3.1	10.7	B	9.0	10.9	4.3		8.9	0 6.7	47.1		9.4	54.5	49.9	
9.5	17 18.6	50.5		9.1	10.7	45.3		9.5	13.0	5.0		9.5	42.6	20.7		9.2	17 28.8	28.2	
8.8	34.7	28.7	K	9.5	20.0	25.2		9.3	22.7	47.7		9.5	47.3	6.6		9.5	49.5	37.6	
9.5	52.5	40.5		9.5	32.4	41.8		9.0	28.3	5.8	B	9.5	1 1.6	16.5		9.1	18 14.1	40.8	K
9.1	53.2	33.6		8.5	58.3	9.5	S	9.1	31.2	45.0		9.5	12.3	4.4		9.4	39.9	32.9	F
8.9	18 6.9	52.2	B	8.0	31 1.1	41.2	K	9.0	31.6	21.1		9.1	34.9	34.2		9.4	40.0	15.9	
9.0	12.1	56.5		9.1	3.2	38.8	K	9.5	39.3	32.5		9.5	50.4	14.1		9.4	53.2	47.2	
8.0	16.4	41.5	K	8.2	25.6	11.6	K	8.3	43 26.6	54.9	K	7.5	59.0	24.1	K	7.4	19 0.9	32.6	I
9.4	40.7	26.7		9.5	35.7	51.2		8.5	33.0	49.7	K	6.9	2 10.9	8.7	K	9.2	5.5	24.6	

5001—5024				5025—5048				5049—5072				5073—5096				5097—5118			
	23ʰ		+38°		23ʰ		+38°		23ʰ		+38°		23ʰ		+38°		23ʰ		+38°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	19	18.3	54.6		9.5	25	2.2	16.9	9.0	33	38.3	10.5	K	9.5	40	8.5	29.9		9.1	49	38.5	37.9	
9.5		27.4	24.4	B	9.5		42.5	6.0	8.5	34	2.9	23.0	K	9.5		49.8	41.7		8.5		40.1	33.1	
9.5		34.7	5.2		9.5		56.7	13.2	9.3		12.7	53.2		9.3	41	6.1	7.7		9.5		54.7	6.4	
9.0		51.2	11.9		9.5		56.7	42.8	9.5		17.5	1.7	B	9.2		25.9	43.5		9.4	50	25.0	48.9	B
9.4	20	10.4	35.0		9.3	26	1.3	35.2	K	9.3		20.5	31.0		9.5		51.8	59.7		9.4		28.7	2.6	
9.5		27.9	19.2		9.5		20.4	30.7		9.5		39.9	42.5		9.4	42	24.1	11.9		9.4		43.6	19.9	
9.0		33.1	28.8	K	9.4		48.6	8.2		9.5	35	2.1	39.3		9.5	43	1.7	12.6		7.8	51	1.5	9.1	K
9.1		47.4	36.5		9.5	27	16.6	56.3	K	8.9		12.2	15.4	K	9.5		1.9	38.6		7.0		34.5	18.8	K
9.5		51.2	18.7		9.5		33.6	22.7		9.5		36.9	31.7		9.5		3.7	50.4		9.5	52	3.9	52.1	
9.3	21	30.0	38.0		9.5		45.0	30.3		8.8		46.7	18.6	K	9.5		24.8	11.9		9.5		20.8	52.1	
9.4		30.0	3.4		9.5		45.7	45.1		8.9		47.1	39.0	K	9.1		50.0	51.9		9.4		26.3	9.4	B
8.0		37.7	49.3	K	9.4	29	53.1	50.8		9.4	36	22.4	18.5		9.0	44	11.9	49.0		6.5		38.1	3.1	G
8.3		38.5	53.3	K	8.5	30	2.7	39.6	K	9.2		50.6	56.7		9.4		20.5	57.5		9.5		49.0	14.6	
9.5	22	34.0	1.5		9.3		25.6	59.2		9.3		51.2	40.3		9.5	45	13.9	37.2		9.4	53	9.0	16.7	
9.5		45.2	46.5		9.5		35.4	13.3		9.4	37	25.6	59.8		9.5		15.2	51.8		9.5		31.7	54.6	
9.3	23	3.4	23.5		9.5	31	0.8	51.3		9.5		34.1	5.0		9.5		25.7	44.7		8.3	54	0.6	49.4	
9.5		23.7	5.0		9.5		33.1	28.0		9.2	38	6.6	58.3		9.3		50.4	41.8		8.2		42.6	23.1	L
9.5		37.1	4.5		8.0		33.5	14.1	K	9.1		9.8	18.1		9.2	46	40.4	27.2	B	9.3		50.2	36.3	B
9.4		46.1	22.0		8.8		36.6	56.3		9.5		12.9	29.3		6.5		44.4	28.7	G	9.3	55	7.1	20.1	B
9.5		48.2	32.6		8.6	32	18.7	13.7	K	9.5		31.5	16.3		9.5		45.8	50.1		9.5		13.0	4.4	
9.4		56.0	57.8		9.5		27.2	45.3		9.3	39	14.7	56.5		9.5	47	7.8	31.2		8.3	56	44.3	19.7	L
9.5		57.9	43.0		9.4		37.4	39.3		9.5		22.1	13.3		8.9	48	3.3	33.2	B	9.0	57	54.7	23.5	
5.8	24	10.5	26.0	K	9.4		40.3	29.9		9.5		24.0	5.8		9.5		11.3	52.2						
9.2		52.7	31.0		9.5	33	16.5	10.6		9.5	40	4.1	5.9		9.1	49	20.7	44.1						

Zone +39°

1—20				21—40				41—60				61—80				81—100			
	0ʰ		+39°		0ʰ		+39°		0ʰ		+39°		0ʰ		+39°		0ʰ		+39°	
m	′	″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	0	7.0	38.5		7.7	4	0.7	35.1	K	9.1	8	33.5	20.8		9.4	13	16.4	53.2		8.9	18	57.3	1.6	
7.2		8.7	15.8	K	7.7		41.6	5.4	K	9.5		35.1	10.2		9.5		25.6	39.6		8.2	19	5.2	42.4	K
6.7		10.1	20.5	K	9.4		47.3	56.3		9.1		45.4	5.1	K	9.5		39.3	9.0		9.2		10.9	7.2	
9.4		15.3	40.2		9.5		58.2	47.1		9.1		45.9	3.9	K	8.5		50.4	53.7	K	9.3		24.4	57.4	
8.4		16.6	47.6	K	9.4		59.7	40.0		8.9		56.6	29.7		9.1	14	20.1	44.6		9.2		32.4	33.7	
9.4		29.4	33.1		9.2	5	4.1	32.4		8.8	9	42.8	21.2	K	9.5	15	13.8	35.8		9.4		35.0	41.7	
9.3		44.7	25.4	K	8.6		46.6	25.0		9.3		58.4	14.0		9.5		29.9	36.3		9.5	20	11.6	10.3	
9.5		55.9	17.0		8.2		57.1	17.8		9.0	10	9.5	16.2	K	9.5		35.2	46.5		8.7		12.4	4.5	K
9.1	1	4.1	13.0		9.4	6	20.5	22.4		9.5		13.5	3.0	B	9.0		46.1	24.9		8.7		15.3	25.0	L
8.5		16.4	55.2		9.5		22.0	49.3		9.5		15.0	49.2		9.5		47.1	19.0		8.7		36.3	42.0	B
6.8		21.0	41.4	K	8.3		24.6	37.2		9.3		22.7	25.4		9.5		50.5	42.4		9.1		38.6	5.7	
8.5		23.7	49.6	K	8.5		29.5	10.1	K	7.6		24.5	56.1	K	8.9		51.1	37.3		9.5		38.9	10.7	
9.5		50.1	41.7		9.5		56.1	27.4		9.2		51.9	36.3		9.4	16	10.5	53.8		9.0		40.3	28.7	K
9.5		52.5	8.1		9.5	7	8.0	46.7		9.5	11	38.2	7.9		9.5		11.4	35.3		9.2		42.4	41.9	B
9.5	2	7.4	33.5		9.5		21 7	33.1		9.5		51.5	36.6		9.2		12.3	4.2	K	9.2	21	25.2	14.8	K
9.3		42.6	5.4		9.5		31.2	52.3		6.6	12	5.8	55.4	K	9.5		15.6	5.7		9.4		29.4	54.6	
8.9	3	2.2	23.2	K	9.3		36.2	14.8	K	9.4		10.3	47.7		9.3		28.9	21.8		9.5		34.3	38.0	
8.5		21.1	46.4	K	9.4		45.1	42.0		9.5		19.2	27.9		9.5		50.3	33.8	B	9.5		38.4	24.0	
9.5		54.4	15.0		9.5		53.7	25.7		9.2		53.6	25.2		9.5	17	21.9	16.8		9.5		47.4	24.0	
8.9	4	0.4	44.9	K	9.5	8	23.0	49.9		9.5		55.0	17.3		7.4		44.2	1.5	L	9.4		56.5	19.8	

101—160					161—220					221—280					281—340					341—400				
	0ᵘ		+39°			0ᵘ		+39°			0ᵘ—1ᵘ		+39°			1ᵘ		+39°			1ᵘ		+39°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.2	22	32.5	0.3		9.4	34	43.1	46.9		8.8	50	11.9	6.7	K	9.4	4	24.0	12.9		9.3	21	53.7	4.6	
9.1		37.9	26.4		9.5	35	0.5	53.6		8.7		39.7	37.1	L	9.5		33.5	36.5		9.5	22	12.3	33.3	
9.1		43.5	33.9	K	8.5		2.8	21.0	K	9.4	51	1.3	52.9		9.5		33.9	29.0		9.5		15.4	5.7	
8.9		58.4	43.5	K	8.5		6.8	35.8	K	7.0		23.0	22.5	K	9.5		55.4	59.8		9.1		27.4	35.0	K
9.1	23	15.8	41.8		8.0	36	11.3	38.0	K	9.5		55.4	43.1		9.5		57.3	39.7		9.5		37.1	1.5	
9.5		28.7	1.3		8.5		23.4	53.1	K	9.5	52	7.5	24.8		9.5	5	39.9	51.5		8.5		49.0	27.0	K
9.5	24	14.3	20.2		7.1		42.4	53.1	K	9.5		11.8	15.2		9.0		42.2	22.0	K	9.5	23	2.2	30.5	
9.5		35.0	4.8		9.4		50.8	50.8	B	9.3		32.7	4.0	B	9.3	6	11.3	28.2		9.2		14.7	22.8	K
9.5		35.8	30.7		9.5		53.1	46.8		9.5		40.7	40.0		9.5		21.5	5.3		9.4		21.1	56.2	
9.5		46.6	1.0		9.5		56.9	20.5		9.5		45.3	42.4		9.5		39.0	23.7		9.4		44.8	7.3	
9.5	25	10.7	40.3		8.9	37	35.6	5.5		9.5	53	5.7	4.9		9.5		50.8	37.3		9.5		50.9	42.0	
9.2		28.6	1.0		9.1		46.9	46.0		9.2		11.4	6.4	B	8.3	7	58.5	53.2	K	9.5	24	56.4	15.2	
9.5		28.6	43.1		9.1		49.2	25.7		9.5		15.5	15.9		9.0	8	24.9	42.1		9.4	25	4.1	40.6	
9.5		39.5	29.7		8.5		58.0	27.2	K	9.5		16.7	7.9		9.1	9	19.8	31.1		9.5		4.3	47.7	
7.2		44.2	18.1	K	9.3	38	11.7	30.2		9.5		21.6	54.4		9.5		39.2	41.1		9.5		44.5	15.2	
9.2		46.1	22.8	K	8.4		17.4	38.1	K	8.8		39.5	44.2		9.4		58.2	59.7		9.5	26	25.1	17.6	
8.1		49.0	5.2	K	9.5		48.6	29.9		8.9		44.5	44.3		9.5	10	11.3	14.0		8.5	27	17.1	4.7	K
9.1	26	22.1	12.9		9.5	39	1.2	8.4		9.5		54.5	14.6		9.5		15.2	41.5		7.5		29.7	7.8	K
9.3		32.6	39.8		9.4		47.2	9.1		8.7	54	5.7	10.6	K	8.4		17.7	27.6	K	9.5		31.0	49.3	
9.5		34.3	4.3		9.3		47.4	28.9		9.3		25.8	50.5		9.5		34.8	40.1		9.5		50.9	1.3	
9.4		54.1	8.0		9.3		50.5	47.2		9.3		30.1	39.9		7.2		36.8	10.8	G	9.5		59.5	41.0	
9.4	27	2.2	41.1		9.4	40	10.1	43.2		9.2		44.3	28.7	K	9.3	11	2.2	20.6		9.4	28	1.2	32.6	
9.5		11.5	19.6		9.5		11.8	40.7		9.5		55.2	8.1		9.3		6.9	14.3		8.5		5.4	20.4	K
9.0		19.1	5.0	K	9.5		29.3	38.0		9.3		58.8	1.7		9.0		17.6	23.2	L	9.2		17.1	51.8	K
9.4		19.9	45.0		8.9		29.7	26.2	K	9.5	55	12.1	3.2		9.3		20.0	16.4		9.4		17.1	40.0	
9.4		33.3	9.5		9.5		55.4	4.4		8.8		13.3	43.0	K	9.5		27.1	0.6	B	9.5		25.8	30.2	
8.3		46.4	38.9	K	9.2	41	15.5	11.2		9.5		47.1	17.6		9.4		35.0	40.6		9.2		51.5	29.5	K
8.6	28	2.7	35.4	K	9.3		23.0	12.4		9.2	56	27.9	15.6		9.0		47.2	53.5		9.5	29	20.6	40.3	
9.2		8.8	20.3		8.2		33.2	30.4	K	6.5		28.8	12.1	K	9.4		58.7	39.2		9.4		29.4	24.2	
9.5		21.6	5.7		9.5		37.4	38.8		9.3		38.6	29.9		9.5	12	33.6	28.0	B	8.2	30	10.0	32.4	K
9.5		32.4	31.0		9.5		40.0	41.5		9.4		39.8	23.0	B	9.4	13	34.3	49.4		9.4		26.6	30.9	
9.1		49.4	24.7		9.5		51.6	49.2		8.6		41.0	12.6	K	9.5	14	10.3	7.8		9.0		57.0	32.8	
9.5		52.1	8.0		9.5	42	1.9	12.2		8.9		56.3	47.9		9.5		38.5	19.6		9.0	31	6.7	51.0	
9.5	29	12.2	30.6		9.5	43	9.6	49.4		9.2	57	3.7	13.6	K	9.2		38.9	10.5		9.1		8.1	59.6	
9.5		17.7	25.7		9.5		18.7	23.0	B	9.2		9.8	21.9		7.7		52.3	50.9	G	9.0		28.2	16.2	
9.5		20.7	25.9		9.3	44	37.8	54.6		9.5	58	49.5	11.4		9.5	15	9.5	53.2		6.7		35.0	56.3	L
8.9		32.8	55.4	K	9.4		41.8	59.8		9.1		52.2	59.9	K	9.5		14.2	26.8		9.5		48.6	32.3	
6.5		39.1	32.1	K	6.5		54.1	27.5	K	9.4		54.5	6.9	B	7.8		39.3	10.2	K	5.4	32	3.1	51.2	G
9.5		52.9	20.5		9.4		59.7	8.0	B	9.3	59	13.8	32.0		9.4		55.8	18.5		9.2		5.2	12.6	K
9.5	30	3.2	26.9		9.5	45	22.2	43.7		9.5		40.9	7.5		9.5	16	0.2	57.4		9.5		28.5	29.9	
9.5		27.4	23.9		9.2		51.2	23.0		9.1		45.3	29.2		9.4		3.8	58.9		9.3		53.5	53.7	K
9.3		39.6	10.4		9.5		57.8	43.5		9.1	0	0.2	25.2		9.5		20.9	18.1		9.0	33	29.3	13.3	
9.5		48.2	37.6		8.8	46	8.1	13.1	K	8.4		1.3	52.5		9.5		21.0	10.9		9.5		47.6	9.1	
8.3		48.2	38.4	B	8.8		9.7	15.8	K	9.3		14.3	5.0		8.9		32.3	36.9	K	7.0	34	6.0	38.6	K
8.6		58.5	38.1	B	9.5		19.7	44.7		9.5		25.8	9.0		9.4		32.9	44.9		8.5		19.6	24.5	K
8.8	31	2.6	10.3	K	9.5		20.6	46.9		8.3		38.6	21.4	K	9.5		46.7	21.6		8.7		25.4	5.8	
9.1		6.7	49.6		9.5	47	12.5	51.1		9.3		51.2	54.1		7.6		53.3	32.0	K	8.6		31.1	15.5	K
8.9		8.2	52.3		9.3		19.2	42.2		8.8		59.7	37.2		8.0	17	22.9	56.7	K	9.5		56.7	55.2	
9.5		47.7	23.0		9.2		24.5	0.1	G	8.0	1	25.6	1.2		8.4		41.7	35.5	K	9.4		57.9	15.4	
9.5		58.4	2.3		7.2		25.4	35.8	K	9.4		27.3	23.1	B	9.1	18	3.8	27.5		9.5	35	12.0	5.9	
9.5	32	4.7	49.9		8.8	48	2.0	41.0	K	8.8		38.6	23.7	K	8.8		16.8	47.3		9.5		24.4	58.3	
9.5		5.8	52.6		9.5		3.0	31.6		8.4		44.2	41.7	K	9.5		23.4	8.4		9.4		44.8	54.5	
9.5		39.6	20.0		9.5		8.0	49.5	B	8.3		50.3	52.0		8.9		24.9	0.7	K	8.0		57.2	13.9	K
7.0		54.6	25.2	K	9.5		22.5	53.9		9.5	2	27.8	36.9	B	6.5	19	24.2	34.3	K	9.5	36	12.1	42.8	
9.5		54.9	42.5		9.5		42.8	47.9		9.5		38.3	48.7		9.5		33.6	11.6		9.5		45.2	35.6	
9.5	33	48.0	14.8		9.5		48.7	20.5		9.1		42.1	2.3		9.5	20	22.5	1.3		9.5	37	9.2	55.2	B
9.2		57.8	30.6	K	7.8	49	3.5	46.2	K	9.1		56.8	54.9		9.3		26.9	27.0		8.8		46.1	23.5	K
7.0	34	9.5	53.6	K	9.2		45.1	13.1		9.5	3	13.4	27.2		9.5		44.4	8.3		8.8	38	4.5	50.2	
9.0		26.1	27.4	K	8.2		58.6	44.5	K	9.5		40.9	0.0		9.0		44.6	6.2	K	9.2		6.0	56.8	
9.5		35.9	4.0		9.3	50	5.1	57.1		9.5	4	10.1	6.5	B	9.4	21	46.4	31.9		9.5		27.1	35.5	

401—460				461—520				521—580				581—640				641—700			
	1ᵘ	+39°			1ᵘ—2ᵘ	+39°			2ᵘ	+39°			2ᵘ	+39°			2ᵘ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	38 47.8	5.1		9.5	56 13.3	49.2	B	6.8	10 42.8	10.2	K	9.5	27 51.4	36.0		9.4	40 0.4	38.8	
9.3	39 6.6	24.5	K	9.4	31.1	28.7	B	9.2	54.8	58.1		6.8	28 17.8	14.8	K	7.8	4.3	52.6	K
9.5	7.2	53.1		9.0	51.0	7.5		9.3	55.2	53.5		9.4	59.8	4.6		9.4	26.3	39.8	B
8.5	22.0	24.3	K	7.8	57 5.2	4.3	K	9.4	11 3.9	3.5		9.1	29 8.5	1.5	K	9.2	30.9	58.6	
9.1	44.9	24.5	K	8.9	5.3	11.9	B	9.2	20.5	6.8	K	8.8	22.9	49.6		9.2	38.5	44.3	
9.5	53.1	33.6		9.5	11.1	49.3	B	8.5	44.5	48.8	K	8.8	24.4	42.6		8.4	43.5	18.9	
9.1	40 20.1	45.2		9.5	20.4	10.7		9.3	46.9	25.3		9.4	34.0	29.0	B	9.0	41 45.9	17.7	
8.7	30.7	34.4	B	8.5	48.7	54.4	L	9.0	49.2	33.8		8.8	36.7	21.3	K	9.4	42 9.9	32.8	
9.5	57.2	48.1		9.5	58 15.7	4.5		9.5	12 23.9	20.7		9.5	48.2	29.4	B	9.0	13.0	20.7	K
9.5	41 23.2	10.9		9.1	15.7	50.9		9.5	49.7	30.6	B	9.5	52.7	3.7		7.8	33.3	32.8	K
9.5	27.4	19.3		9.3	52.1	32.7	K	9.5	13 19.4	52.3		9.2	54.5	29.3	B	9.5	55.5	34.4	
8.5	30.2	44.6	K	8.3	59 22.1	4.4	B	9.5	25.3	11.3	B	9.5	30 14.4	57.4		9.5	43 15.9	46.6	
9.1	35.3	57.5		9.5	24.9	12.4		8.7	41.7	10.1	K	8.9	26.9	29.9	K	9.4	38.9	47.6	B
9.5	42 7.0	54.5		9.4	42.4	2.6		9.0	45.0	53.7		9.3	40.3	46.2		9.0	48.6	17.8	K
9.4	10.6	7.1		9.5	49.6	4.1		9.4	48.8	2.7		9.5	53.9	20.7		9.5	54.0	48.5	
8.7	11.1	40.3	K	8.9	51.9	47.9	K	9.5	14 6.1	10.8		8.4	55.8	12.7	L	9.5	56.3	7.5	
9.4	35.3	13.1		9.0	58.6	16.1		8.0	15 10.0	26.2	B	9.4	31 11.8	3.4		9.3	44 10.9	33.3	
9.5	44.7	46.1		9.2	59.8	46.9	B	7.0	19.5	9.8	K	8.7	32.8	29.1	K	8.8	22.4	41.8	
9.5	43 25.1	16.4		9.0	0 1.0	8.8		9.4	43.9	29.4		9.4	36.4	46.1		8.8	28.0	28.0	K
8.2	39.7	55.2	K	9.0	18.0	51.0	K	9.5	16 40.0	39.0		9.5	45.5	36.1		9.3	29.5	12.6	
8.9	44.6	50.3	K	9.3	20.4	42.9	K	9.5	47.5	22.8		9.4	46.7	6.2		8.3	55.5	59.3	K
9.5	48.1	19.9		9.5	26.6	55.7		9.5	52.1	2.9		9.5	32 17.5	3.6		9.5	46 5.8	58.6	
9.3	44 21.4	41.3		8.8	1 2.2	35.3	K	9.0	54.2	26.5	K	8.5	20.4	39.0		9.5	47 10.5	5.8	
8.0	36.5	26.9		8.4	4.0	50.2	K	9.4	17 2.6	9.9	B	9.5	30.3	46.3		9.5	15.0	51.7	
9.3	49.6	32.5		9.4	6.9	53.6		9.4	53.8	50.1		9.4	30.4	5.6		9.1	22.2	53.5	B
9.4	52.1	50.6		9.0	58.0	16.6	K	8.9	55.8	58.5	B	9.0	34.7	7.6	K	9.3	23.7	32.1	
7.8	59.1	9.9	B	9.4	2 1.4	7.0		8.9	56.7	35.5	K	9.2	39.1	39.4	B	9.3	27.7	51.2	
9.5	45 38.7	36.3		9.5	17.7	15.8	B	9.4	18 15.0	13.1		9.3	44.1	45.9		9.5	39.4	25.3	
9.5	39.3	8.3		9.5	21.3	27.7		9.1	19 7.8	42.9		8.8	50.4	53.9		9.4	41.0	12.5	
8.9	40.7	58.8		9.5	25.7	44.6		9.3	46.5	13.0	B	4.9	33 7.5	34.0	K	9.5	45.0	5.5	
7.3	56.1	55.6	G	9.5	3 8.8	44.1	B	9.5	20 4.9	36.5		8.7	19.7	38.1	K	8.3	46.0	39.9	K
8.0	58.7	34.3	B	9.2	21.3	36.5		9.0	21.9	21.3	B	8.0	21.0	38.5	K	9.5	48 1.1	40.3	
7.0	46 4.0	13.6	K	9.5	24.5	53.4		9.2	21 13.8	8.1		9.4	25.4	9.9	B	9.5	6.6	32.4	
6.8	11.6	58.8	L	8.9	25.4	57.7	K	6.8	37.0	31.2	K	9.3	40.9	10.1	B	9.4	15.3	54.8	
9.5	23.7	29.5		8.0	49.9	34.4	K	9.5	22 5.0	6.0		8.9	43.1	33.5		9.5	24.2	22.8	
8.5	50.1	44.6		7.2	4 5.4	59.2	K	9.2	42.3	53.7		9.4	34 5.9	8.3		9.5	57.8	49.0	
9.5	47 21.6	52.2		9.5	14.7	27.8	B	7.7	45.8	18.0	K	9.5	7.3	14.1		8.5	58.5	17.3	
8.8	31.7	12.7	K	7.0	20.0	49.6	L	9.3	55.4	13.6		8.8	54.8	16.0		9.3	49 4.0	5.1	
9.0	37.6	29.4	K	9.2	27.5	37.2	B	7.3	23 21.8	25.3	K	9.5	57.8	53.8		9.5	8.5	44.3	
9.5	49.9	28.7		9.2	58.0	45.5		6.8	22.8	36.9	K	9.1	57.9	34.8		9.0	28.6	28.2	
9.1	48 27.6	37.2		8.7	5 35.9	5.1	K	9.5	47.6	5.4		9.5	35 11.6	8.7		5.1	29.5	4.5	K
8.8	46.8	45.1		9.4	39.2	20.6	B	9.0	24 0.0	56.9		9.0	41.6	29.5		9.5	55.8	30.8	
9.3	49 20.1	12.8		8.8	49.4	4.2	K	9.3	10.2	40.5		9.5	36 1.8	0.1		8.8	50 1.4	15.2	
9.0	23.3	10.0	B	9.5	55.0	24.6		9.3	14.6	9.0		9.5	12.3	29.5		8.3	2.1	42.4	
9.0	34.2	21.5	B	9.5	55.4	51.9		9.2	55.9	51.7		9.5	22.6	29.0		9.0	51 4.2	26.3	K
8.8	34.9	59.2	B	9.0	6 5.7	5.5		8.3	25 14.9	39.1	B	9.3	23.4	16.2	B	9.2	11.2	20.0	B
8.8	39.4	50.0		9.0	23.2	6.9	K	9.3	37.9	14.1		9.5	45.3	32.7		7.3	35.7	51.2	K
8.0	50 54.8	50.9	K	8.6	44.6	4.1	K	9.1	40.8	25.3		7.8	48.2	58.4	K	9.5	43.6	33.0	
9.5	51 5.1	7.1		9.5	7 32.0	36.2		9.5	26 1.9	38.2		9.0	51.9	41.9		9.2	46.1	54.3	
7.9	46.9	15.7	B	9.3	8 6.8	39.7		8.5	9.8	38.1	L	8.5	52.3	14.0	K	9.1	47.2	11.9	
9.5	52 2.4	6.7		9.4	8.7	21.4		8.0	10.0	56.9	K	8.5	37 5.6	11.7	K	9.5	57.5	2.4	
9.4	3.9	33.2		8.8	12.1	0.3	K	9.3	21.9	56.4		9.5	10.0	42.9		8.8	52 4.7	40.6	K
9.5	56.5	51.3		9.4	48.2	25.0		7.0	26.5	2.6	K	8.9	14.3	49.0		7.7	17.2	47.3	K
8.4	53 3.4	57.9	K	7.8	59.8	52.5	K	9.4	32.9	57.0		8.2	38 10.6	17.1	K	9.4	53 2.6	39.1	
9.5	54 52.5	40.0		9.2	9 19.7	20.3	B	9.5	55.0	10.3		9.5	35.8	50.1		9.5	17.8	42.1	
9.0	57.8	47.2	K	9.5	30.3	46.0		8.3	57.9	57.5	K	9.3	50.7	32.4		9.5	45.7	46.6	B
9.1	55 2.0	21.4	K	6.5	45.0	36.5	S	7.7	27 15.8	34.0	L	8.8	39 27.8	11.2	K	9.5	54 58.9	53.6	
9.4	28.5	24.6	B	9.4	54.1	43.5	B	9.4	29.2	7.9	B	9.1	31.7	53.4		9.3	55 0.4	15.6	
9.3	56 1.9	47.5	B	9.4	10 16.4	3.0		9.5	32.0	48.8		9.1	53.5	54.3	L	6.8	7.2	43.0	K
9.2	13.0	53.9	K	9.3	32.7	36.9		9.4	34.8	54.8	B	9.3	59.9	27.9		9.5	46.6	36.6	

701—760				761—820				821—880				881—940				941—1000			
	2ᵘ—3ᵘ	+39°			3ᵘ	+39°			3ᵘ	+39°			3ᵘ—4ᵘ	+39°			4ᵘ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	55 55.7	11.5		9.5	11 52.4	31.4		9.5	26 10.7	0.6		8.5	42 52.9	39.5	L	9.4	0 47.8	56.4	
8.0	56 8.0	4.2	K	9.5	12 14.2	40.0		8.7	23.8	6.1	K	9.1	43 3.8	32.7	B	9.2	57.7	41.8	B
9.3	9.2	53.4		9.3	14.8	47.8		9.1	30.7	51.9		9.4	43.4	30.4		8.9	1 28.5	13.5	K
9.4	29.4	49.9	B	9.0	16.0	2.9	K	9.4	33.5	46.9	B	9.5	44 21.2	38.0		9.5	30.4	4.0	
9.5	33.6	50.2	B	9.0	46.9	47.0		9.5	44.6	22.1		9.5	22.7	10.0		8.2	52.2	53.0	B
9.0	34.7	40.1		9.0	58.4	30.2		9.5	49.7	4.2		9.5	50.1	4.6	B	9.4	58.0	49.7	
9.3	45.4	35.4		9.0	58.5	3.9	K	9.3	27 37.4	15.6	B	7.8	45 14.7	24.5	K	9.1	2 8.7	38.5	
9.4	57 14.2	22.2		9.5	13 14.3	59.0		9.4	41.3	17.1		8.8	20.6	28.4		9.5	14.1	3.2	
9.5	29.7	13.6		9.4	28.0	38.9		7.0	48.6	36.4	K	9.3	34.3	11.0		9.4	14.5	18.2	
9.1	31.6	48.0		8.5	39.1	38.0	K	9.5	28 3.2	44.3		9.5	38.7	30.6		9.1	16.0	35.7	
9.4	40.2	21.3		9.4	44.3	43.7	B	9.5	10.0	1.7		9.0	44.2	12.5		8.7	53.7	5.3	K
8.0	56.9	38.4	K	9.5	48.7	9.5		9.5	57.6	29.2		9.5	56.7	12.5		8.1	3 13.5	58.8	L
8.2	58 17.8	30.9	K	9.4	14 14.9	14.5		8.9	29 5.7	13.1		9.5	46 18.2	32.7		9.4	33.8	59.8	
9.5	46.2	50.7	B	8.9	15.8	0.0		9.4	11.4	5.3	B	9.5	47 43.7	57.3		8.3	44.1	42.1	K
9.5	51.0	54.8		7.0	57.2	31.7	L	9.3	54.7	10.4		3.2	48 9.1	35.4	K	9.3	51.9	59.0	
9.1	54.2	33.6		9.3	15 11.3	9.9		9.5	54.9	47.4		9.0	17.0	32.5	K	7.0	57.3	18.9	K
9.1	59 3.1	11.5		9.2	11.3	2.2		9.4	30 19.6	20.0		8.8	32.8	2.4	K	9.1	4 23.8	58.8	K
9.4	4.1	54.5		7.8	28.4	41.6	K	9.4	31 22.4	39.8		9.5	49 9.4	54.2		9.4	5 17.4	52.1	
9.4	21.5	51.0		9.1	32.7	31.0		9.3	27.4	19.6	B	9.5	14.5	48.3		8.9	41.0	48.3	
9.4	31.2	39.3		8.8	34.6	37.6	K	9.4	34.9	18.1		9.5	32.2	24.3		9.5	6 18.9	55.2	B
9.5	39.5	50.2		9.5	44.7	4.4		9.3	41.4	21.8		9.5	49.0	43.8		9.5	49.0	0.9	
9.4	1 9.2	27.2		8.8	16 17.9	57.2	K	9.4	47.4	5.0		8.8	50.2	35.9	B	7.5	50.4	39.7	K
9.0	32.7	10.0	K	9.5	21.1	5.9		9.4	54.8	17.6		9.5	50 5.0	44.2		9.5	55.4	11.5	
5.2	57.1	3.9	K	8.2	54.3	56.0	K	8.5	32 3.3	13.7	B	7.4	26.8	35.8	K	9.5	7 9.4	32.3	
9.2	2 8.2	38.0		9.3	17 33.4	57.8	B	9.4	28.6	46.3		8.5	46.4	47.4	K	8.9	54.9	52.7	
8.7	17.4	33.3	K	9.0	49.9	36.7		8.8	33 17.2	26.5		9.1	49.0	53.3		9.5	8 33.2	37.7	
9.4	27.9	4.1	B	9.5	18 5.2	46.5		9.5	34 1.7	55.1		9.5	51 9.0	37.6	B	8.9	39.0	29.6	
9.5	31.3	26.3		8.6	49.2	27.8	K	9.4	6.7	10.5		9.2	22.7	54.1		9.5	40.0	58.5	
9.4	3 12.6	47.4		6.8	57.2	39.7	K	9.5	27.3	27.8		7.0	33.0	41.8	K	9.5	9 21.3	15.1	
9.5	25.2	44.3		7.3	19 24.7	41.1	K	9.5	41.6	27.0		8.3	37.4	29.9	L	9.4	27.4	51.8	
9.5	48.1	42.9	B	9.4	26.0	5.0		9.3	35 24.0	58.4		7.3	52 4.7	33.8	L	9.5	29.9	37.0	
9.0	50.5	3.2		9.5	58.7	51.5		7.0	26.4	37.4	K	9.1	13.6	56.3		8.0	52.4	34.1	K
8.5	4 4.0	36.0	K	9.4	20 1.2	29.5		9.4	36 3.1	33.1	B	9.0	30.2	41.7		7.8	10 25.2	29.2	K
9.5	14.9	18.8	B	9.2	23.0	9.0		9.5	10.3	42.6		9.1	38.8	34.0		9.5	46.3	53.5	
8.8	35.2	58.3		8.6	40.6	35.5	K	9.4	18.0	38.4	B	9.5	53 46.0	49.4		9.3	11 0.5	45.4	
8.5	39.3	40.4	K	9.5	42.4	50.8		9.5	23.9	35.3		9.5	54 8.8	21.7		9.0	15.3	8.4	K
7.5	43.2	33.7	K	9.5	21 0.7	9.4		9.5	28.1	41.0		9.5	20.0	56.4		9.1	22.0	13.3	
8.3	5 18.2	21.7	K	9.3	3.6	42.3		9.0	37 9.4	8.1	K	7.0	23.4	6.0	K	9.2	23.9	4.7	
9.5	43.1	17.0		8.9	5.7	48.8		9.3	23.9	25.6		9.3	26.2	17.0		9.3	56.5	11.4	
9.5	6 10.9	40.0		9.5	26.6	29.6		9.4	34.9	43.5		9.4	55 9.5	54.5		7.4	12 9.7	35.3	K
8.9	7 1.3	9.3		8.0	32.1	8.6	K	9.0	38 2.2	14.5		7.5	42.5	53.8	K	9.5	52.4	43.0	
9.5	28.7	4.7		9.5	58.6	56.5		8.5	4.6	23.1	K	8.4	56.7	22.0	L	9.2	13 11.4	13.8	K
6.8	44.5	57.2	K	9.5	22 10.4	9.4		9.4	13.8	54.1		9.4	58.9	40.1		9.5	18.0	19.5	
9.0	52.6	28.7		9.5	34.2	41.3		9.5	43.1	8.1		9.0	56 2.1	42.2		9.5	30.4	44.1	
9.4	57.7	40.0		9.5	51.7	18.5		9.0	47.9	47.0		9.5	36.9	44.3		9.5	37.2	48.4	
9.3	8 15.8	0.4		9.1	23 7.8	50.9		9.4	55.2	10.8	B	9.2	44.1	19.8		9.5	15 35.3	30.2	
9.3	28.2	33.3		9.5	21.4	59.7		9.4	39 4.6	44.3		9.3	52.4	7.3		9.4	42.9	5.3	
8.8	34.5	11.6	K	9.2	23.6	23.6		9.2	41.7	48.5		9.0	57 14.0	31.6		8.6	16 46.9	43.7	B
8.8	50.5	8.2		9.3	34.4	23.1		9.1	44.9	57.8		8.8	14.8	0.1	K	8.0	17 7.5	57.4	L
9.5	9 6.7	19.1		9.5	24 1.2	50.2		9.5	40 8.2	51.6		8.7	16.4	10.7		9.2	7.5	32.9	
9.4	39.5	0.1		6 0	2.2	24.9	G	9.4	11.4	57.3		9.5	31.0	30.1		9.3	27.0	4.8	
8.9	42.9	38.0		8.9	18.8	45.0		9.5	27.6	29.7		9.3	58 18.5	29.8		9.4	41.0	4.9	
9.5	54.6	16.3		9.5	42.7	21.8	B	9.5	41 30.7	11.5		8.8	33.3	32.0		9.5	41.7	28.4	
9.4	55.7	58.3		9.4	49.2	45.5	B	9.0	42 7.9	49.2		8.8	37.1	11.6	K	8.0	42.8	21.3	K
9.0	10 19.5	56.7		9.4	25 1.6	28.0		8.2	11.0	18.1	B	9.5	45.4	59.0		9.5	18 9.6	51.8	
9.5	33.1	53.5		8.0	2.6	48.1	K	9.0	19.9	19.4		8.0	55.4	19.0	K	9.5	11.9	10.5	
9.3	42.4	3.1	B	9.5	46.8	18.2		9.5	20.9	57.5		7.8	59 24.5	46.4	K	9.4	12.5	3.7	
9.4	53.8	0.6		8.6	49.4	52.1	K	8.3	22.2	49.1	B	9.1	29.0	50.4		9.4	31.7	21.1	
9.4	11 11.2	15.3		9.5	59.3	18.2		9.0	47.6	23.9		9.2	29.3	37.9		9.0	48.2	7.5	
9.3	50.6	58.8		9.1	26 6.7	25.3		7.5	51.0	55.4	L	9.2	0 26.7	44.3		9.5	19 15.0	8.9	

1001—1060				1061—1120				1121—1180				1181—1240				1241—1300			
	4ᵐ	+39°			4ᵐ	+39°			4ᵐ	+39°			4ᵐ—5ᵐ	+39°			5ᵐ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	19 20.1	1.1	K	9.3	37 9.2	20.1		9.5	48 10.5	26.2		9.5	58 18.6	37.2		9.0	7 55.0	23.5	K
9.3	24.0	10.3		9.5	22.1	52.0		7.3	10.8	50.0	K	9.5	18.8	50.4		9.2	56.6	7.4	
9.2	24.8	7.9		9.4	34.1	36.9		9.5	14.0	5.0		8.0	27.3	40.3	K	9.4	8 28.7	37.1	
8.5	20 8.9	31.2	K	9.4	39.5	26.0		9.5	17.2	6.4		9.0	32.0	46.5		9.2	30.4	25.0	K
9.1	11.0	13.0		8.5	44.1	58.5	K	9.5	30.3	3.1		9.5	34.8	12.0		8.2	33.2	11.2	K
9.4	15.2	19.8		9.5	44.7	12.8		9.4	42.0	23.6		9.5	36.2	59.6		8.8	42.3	2.6	K
8.6	32.2	13.7	K	9.4	45.4	25.0		8.8	57.8	51.3	K	9.2	39.5	8.8		9.5	47.3	7.7	
8.0	32.7	32.8	K	9.5	56.3	3.7		9.5	49 9.5	26.2		9.5	41.4	32.4		4.9	56.3	58.8	K
8.5	34.1	6.4	K	9.2	38 8.9	42.1	B	9.2	21.9	35.0		9.5	43.4	29.9		9.4	58.9	52.4	
9.3	44.4	26.6		9.4	18.8	41.0		9.5	25.3	48.0		9.5	47.2	2.7		9.1	9 0.5	59.5	
8.5	50.5	30.2	K	9.5	53.5	18.0		9.4	33.1	6.2	B	8.0	54.3	17.6	L	8.2	10.4	25.0	K
7.8	53.4	48.8	L	9.5	39 1.9	56.4		9.2	50 3.4	26.7		8.1	59 41.5	23.8	L	9.5	25.1	23.3	
6.6	21 31.7	41.6	K	9.3	23.3	0.5		6.4	20.4	10.4	K	9.5	46.6	32.7		9.1	49.3	29.7	
9.5	42.4	2.6		9.1	31.0	30.2	K	6.8	23.5	26.0	K	7.9	55.3	57.6	K	9.0	54.5	13.4	
9.2	50.7	40.0		9.2	31.1	16.6	B	9.0	35.3	15.2		9.1	0 25.0	1.5		7.3	10 1.3	38.0	L
8.3	51.4	35.2	K	9.5	39.9	10.1		9.5	36.0	45.4		9.5	28.7	34.9		9.5	4.4	1.1	
9.3	22 45.5	15.0		9.3	57.1	46.0		9.4	38.7	40.5		9.5	40.4	55.9		7.6	5.4	11.1	B
9.5	46.5	40.9		9.5	40 0.4	32.3		7.5	51 22.0	44.8	L	8.2	1 3.9	5.5	S	9.4	9.0	24.0	
9.0	23 11.8	55.4		8.7	17.1	33.9	K	9.5	25.9	22.7		9.3	24.3	28.5		8.5	13.9	24.5	
9.5	12.9	37.5		9.5	47.3	20.3		9.1	27.3	4.4		9.0	25.3	27.0		9.2	32.7	29.1	
9.2	21.7	5.6		9.3	51.0	10.2		9.4	32.8	52.2		8.4	50.1	45.3	L	9.5	51.0	40.1	
9.5	35.5	11.7		9.4	56.9	55.9		8.5	39.3	1.8	K	9.0	54.0	27.0		8.0	59.3	28.0	K
9.3	52.8	5.3		9.5	58.3	12.9		9.2	40.3	3.5	K	8.9	57.5	58.6		9.5	11 2.3	0.6	
9.5	59.6	33.0		9.5	41 27.9	20.0		9.5	58.7	12.4		9.4	2 9.4	22.8		9.4	5.0	10.0	
9.0	24 8.8	48.3		9.5	30.7	43.0	B	9.5	52 3.8	36.4		7.1	11.4	55.1	K	9.4	10.8	14.6	
9.5	13.1	4.8		9.4	31.0	30.4		9.5	33.2	25.8		8.8	13.0	30.9	K	8.9	12.3	33.9	
9.4	20.0	12.7		8.8	42 10.5	23.0		9.5	51.1	45.8		9.4	14.1	38.9		8.6	14.7	31.9	K
9.2	25 1.4	0.8		9.5	17.3	6.0		9.4	58.3	57.9		9.5	24.3	38.6		9.5	26.0	19.3	
9.3	13.5	1.8		9.5	21.3	8.0		9.5	53 17.5	9.2		9.5	31.0	45.2		9.5	26.4	43.2	
8.0	48.9	26.2	K	8.0	30.8	2.2	K	9.5	19.0	15.9		9.5	35.8	53.5		9.5	33.6	56.7	
9.5	49.9	0.9		9.5	38.9	56.8		9.3	21.7	20.1		9.5	44.3	29.0		8.4	44.3	32.7	K
9.3	26 3.0	36.4	K	9.3	57.3	48.3		8.5	25.2	51.8	B	9.4	3 0.0	19.2		7.5	53.5	25.3	K
9.2	23.0	23.5		9.4	43 37.3	0.5		9.4	30.6	52.0		9.1	8.3	58.3	K	9.1	56.9	37.6	
9.4	24.3	33.3		9.5	38.9	42.6		9.5	55.3	36.3		9.5	23.0	10.2		8.7	12 4.8	21.8	K
9.5	27 3.5	37.4		9.4	48.0	55.0		9.5	54 1.3	22.0		9.1	51.6	47.2		9.5	35.8	23.1	
8.0	39.9	59.9	K	8.3	55.8	45.8	K	9.2	6.7	20.3	K	9.5	4 3.0	41.5		9.5	53.0	15.0	
8.2	28 30.2	9.2	B	9.5	56.3	13.9		8.3	35.6	45.8	K	9.3	17.2	50.0		9.2	58.1	26.0	
9.0	46.2	26.9		9.1	44 6.1	54.5		9.5	36.9	53.2		8.9	18.9	8.0		8.6	13 2.3	9.0	K
9.3	29 2.4	57.0		8.9	8.3	20.6		8.2	40.8	36.4	K	8.0	24.3	11.5		9.5	6.5	59.0	
9.2	15.1	34.0		9.1	24.0	19.4		9.4	54.7	3.5		9.0	35.8	41.1		9.5	7.9	55.6	
9.5	54.2	56.3		9.5	44.1	11.8		9.5	55 0.0	47.3		9.3	38.4	58.8		9.5	15.3	12.5	
7.0	30 9.1	30.2	K	9.3	49.7	44.2		9.5	1.9	17.0		9.5	43.2	35.0		9.2	36.0	3.3	
8.8	44.1	3.3	K	9.2	53.4	37.7		8.5	9.3	4.3	K	9.5	52.1	28.3		9.5	37.7	26.8	
9.5	31 7.3	11.9		9.4	45 5.1	42.9	B	8.8	13.5	54.4	K	8.5	54.4	20.3		9.0	49.5	53.4	
8.8	16.3	18.1	B	8.4	8.2	39.9	K	9.0	36.3	21.1		8.8	5 6.3	57.4	K	9.4	49.6	5.0	
9.5	33.3	54.2		9.4	30.4	45.8		9.5	58.2	13.7		9.0	14.0	28.0		9.5	51.7	40.5	
9.5	41.2	50.4		9.4	58.3	56.6		8.6	59.8	22.8	L	9.5	45.6	30.6		8.9	52.0	57.6	K
9.5	42.0	45.5		9.5	59.2	45.5		9.4	56 0.9	42.3		9.5	6 0.5	50.7		9.5	14 4.8	22.2	
9.4	32 5.9	39.3		8.0	46 29.5	56.1	L	7.8	24.3	50.0	K	9.4	2.7	1.0		8.0	8.3	13.3	
9.5	8.4	35.3		9.5	40.3	22.7		9.1	35.3	41.8	L	9.4	18.9	56.8		8.6	16.3	30.0	K
9.5	57.5	17.7		9.5	41.7	48.6		9.5	45.9	58.3		8.7	23.8	41.8		8.8	19.5	11.7	
8.9	33 44.1	56.6	L	8.5	46.3	3.3	K	9.5	57 10.3	37.3		9.2	24.1	37.6		9.5	28.3	0.5	
9.5	34 11.5	8.6		9.0	59.1	35.4	K	9.5	26.5	2.6		9.0	49.3	48.4		9.5	29.0	46.5	
8.3	35.4	36.0	K	8.5	47 11.3	1.4	K	9.0	32.3	57.4		9.5	7 3.7	50.0		8.8	39.1	36.4	
9.1	52.5	1.9		9.1	14.0	8.0		7.8	48.6	45.0	K	9.5	7.0	52.7		9.1	58.0	58.0	
8.8	55.4	17.5		8.4	43.4	14.9	K	8.0	51.3	39.3	K	7.0	11.3	18.0	K	9.2	15 26.0	33.9	
9.5	35 6.0	43.4		8.0	50.9	24.6	K	9.4	58 9.2	9.9		9.4	16.5	59.7		9.5	45.8	31.5	
9.5	25.5	43.2		9.2	58.3	12.7	K	9.5	12.4	34.4		9.2	17.8	10.7		9.5	56.7	26.0	
9.4	36 13.4	5.7		9.5	48 6.7	12.3		9.5	15.9	50.4		9.5	25.7	40.8		8.3	16 22.3	30.4	K
9.5	37 2.0	54.5		9.1	7.0	42.1		8.0	17.5	31.9	K	9.5	32.9	27.5		9.5	24.5	1.5	

1301—1360				1361—1420				1421—1480				1481—1540				1541—1600			
	5ᵘ	+39°			5ᵘ	+39°			5ᵘ	+39°			5ᵘ—6ᵘ	+39°			6ᵘ	+39°	
m		′		m		′		m		′		m		′		m		′	
9.4	16 45.3	2.2		9.3	27 7.7	10.2		8.0	39 58.1	31.3	S	9.4	50 47.9	53.5		9.5	1 42.5	23.3	
9.0	50.0	17.8		9.3	8.5	30.9		9.2	40 14.4	56.7		9.1	51 7.5	57.0		9.1	45.0	30.0	K
9.5	17 2.4	10.4		9.5	34.1	11.5		9.0	26.1	31.2		9.4	18.2	57.0		9.5	2 1.0	2.8	
9.0	32.7	54.9	K	9.3	34.4	56.8		9.5	31.7	50.8		9.5	28.7	20.9		9.5	22.5	27.0	
8.9	47.0	2.3	K	8.9	28 12.3	5.9		9.5	34.0	25.3		9.5	44.7	50.4		9.5	47.0	13.4	
9.2	49.1	5.6		9.5	15.2	25.8		9.5	34.6	44.0		9.5	50.0	54.7		9.4	3 5.1	29.0	
9.3	51.2	3.6		8.7	31.9	50.7	K	9.5	35.7	37.0		9.2	53.9	21.6	K	9.5	13.8	27.5	
8.6	18 5.9	3.5	K	9.4	42.8	16.4		9.2	41 10.3	44.8		9.5	52 19.8	42.1		9.2	23.9	36.9	
9.1	37.0	44.5		9.5	47.1	3.1		4.0	26.6	6.0	G	9.5	26.6	16.3		8.7	44.7	16.1	
9.1	39.4	48.2		9.5	29 4.9	28.8		7.7	51.1	31.2	B	9.5	36.0	27.8		9.2	47.0	45.9	
9.0	53.7	35.9		9.4	12.8	7.6		9.5	42 2.9	4.1		9.5	38.5	38.4		9.4	4 6.4	12.7	
9.5	19 15.9	52.2		9.5	31.0	38.5		9.3	15.6	8.8		9.4	47.3	7.0		9.0	13.4	8.3	K
8.6	18.0	13.2		7.8	54.5	47.7	B	9.4	31.4	54.0		9.3	53 8.0	56.4		7.9	14.4	42.6	K
9.0	33.9	16.9		9.5	56.7	30.2		9.5	31.8	50.6		8.7	17.6	48.5		9.5	30.0	59.9	
9.0	38.0	41.2		8.9	30 4.4	51.4	K	7.3	34.6	31.9	B	9.3	25.5	23.8		9.5	34.9	21.4	
8.6	51.5	31.4		9.5	4.5	15.4		8.6	48.9	9.5		9.3	36.0	38.4		9.5	35.4	26.6	
9.5	20 6.9	42.7		7.7	26.1	45.0	B	8.6	54.8	12.2		9.3	38.7	43.6		9.4	39.0	19.9	B
9.2	23.9	34.4		9.5	40.9	22.4		9.5	43 9.4	3.7		9.5	51.0	22.6		9.5	57.5	6.0	
9.5	25.3	5.3		7.9	31 1.4	33.1		9.5	31.5	33.9		9.2	53.7	51.4		8.0	5 9.5	58.9	B
9.5	25.8	48.0		9.1	21.3	52.6	K	8.2	35.9	4.0	K	8.8	54 18.1	57.4		9.0	23.4	58.2	
7.7	34.7	42.6	K	9.2	26.1	47.5		9.0	43.2	19.7		9.5	20.6	5.5		9.5	33.4	57.2	
6.5	40.5	42.6	K	9.5	26.4	19.9		8.7	47.5	12.0	K	9.5	23.7	0.6		8.5	36.8	46.1	K
9.5	54.4	25.0		9.2	28.5	41.0		9.5	57.5	26.6		9.1	38.7	23.8	K	8.2	37.4	32.8	K
9.4	54.4	4.8		9.4	43.3	55.5		9.4	44 7.9	15.8		9.3	42.4	33.0		9.2	45.1	20.2	
9.2	56.9	29.7		9.5	53.3	49.8		9.5	8.6	45.9		9.3	55 1.3	11.0		9.4	46.3	1.2	
8.0	57.0	54.9	G	9.5	58.7	56.7		9.5	17.0	28.1		9.4	8.0	50.8		9.2	51.4	14.5	
9.5	21 0.7	28.5		8.5	32 19.3	43.3	K	9.3	26.6	9.4		8.6	21.1	22.9	K	9.3	56.4	14.8	
9.2	22 8.1	56.6		8.2	33 10.4	53.8	B	8.5	34.7	7.0	K	8.9	31.7	39.2		8.8	6 22.4	34.8	
9.3	11.4	9.4		9.2	25.7	39.3		9.5	45 31.8	1.5		8.9	56 6.4	36.7	K	9.5	46.3	30.3	
8.2	40.5	27.4	K	9.5	31.4	30.2		9.5	38.3	2.4		9.4	10.3	58.4		8.8	49.2	45.4	
9.5	47.3	56.5		9.0	53.2	20.3	K	9.0	50.9	47.3		9.2	12.4	45.6		9.3	7 21.5	59.5	
9.5	53.3	8.0		9.4	56.5	52.9		9.5	54.0	58.1		8.3	33.4	6.5		9.3	23.0	52.3	
9.5	59.4	18.3		9.5	34 20.7	38.1		8.5	46 4.1	40.7		9.4	37.5	0.0		9.1	23.9	35.5	
9.0	23 10.6	23.3		9.2	24.5	22.3	K	9.3	12.4	0.6		8.6	51.5	45.2	K	9.4	27.5	30.9	
7.8	14.3	24.3	K	9.4	41.3	52.4		9.4	15.5	6.3		9.1	57 5.8	10.3	B	7.0	29.0	54.1	B
9.5	35.7	10.0		9.5	42.0	37.0		9.4	25.5	14.0		9.5	6.4	6.9		6.9	39.4	31.0	G
8.7	46.8	17.9		9.2	53.1	47.4		9.0	29.6	9.7		9.1	8.0	22.7		8.7	40.5	37.7	
9.5	24 23.5	54.2		9.3	54.5	15.3		9.5	45.3	26.0		8.3	22.4	49.9	K	8.6	47.0	57.5	
9.5	31.8	27.7		9.1	56.0	22.8	K	9.5	47 9.0	21.0		9.5	43.8	25.7		8.2	49.0	10.6	
9.5	45.6	16.4		9.4	35 1.4	32.7		9.5	21.7	59.4		8.4	47.4	45.2		8.0	55.9	8.4	
9.0	47.5	5.3		9.4	15.0	36.2		8.2	22.9	56.4		9.4	55.4	59.5		9.2	8 8.4	38.0	
8.9	54.0	7.5		9.2	33.3	42.6		9.5	24.4	57.6		8.0	58 0.5	13.3	K	9.4	14.3	6.4	
9.3	58.0	35.0		9.5	49.1	54.9		9.5	26.8	0.5		8.7	2.3	45.2		9.0	33.4	12.8	
8.3	25 0.2	32.8	B	8.3	59.0	10.2	K	9.4	47.9	35.9		9.3	13.2	27.9		8.2	9 1.4	49.8	
9.3	0.5	40.5		7.6	36 11.8	0.5	K	9.5	51.3	52.6		9.4	14.4	32.0		9.5	2.1	57.6	
9.5	0.5	25.5		9.5	39.4	15.4		9.5	59.8	35.7		9.2	16.4	58.7		9.1	10.0	35.3	
8.7	3.3	45.0	K	9.5	43.7	51.5		9.1	48 11.0	48.8	K	9.5	45.4	8.0		9.0	14.3	37.5	
9.5	14.4	8.3		9.2	46.8	34.0		9.2	16.5	53.2		9.1	59 7.9	16.1	B	9.5	26.8	13.5	
9.5	22.0	8.8		9.5	37 30.7	30.0		9.2	17.7	48.0	K	8.8	16.3	42.6	K	8.1	29.4	52.5	K
9.2	28.7	54.1		9.4	40.0	41.0		9.5	33.0	7.2		9.2	17.4	8.0		9.5	47.3	28.2	
9.5	43.0	2.8		9.3	38 3.1	40.1		8.0	41.9	41.1	K	8.9	19.4	8.7		9.5	52.1	30.0	
9.4	46.5	54.5		9.2	5.3	10.5		9.5	47.5	45.2		9.5	26.8	33.9		9.3	52.4	12.8	
9.5	58.7	30.6		9.5	6.0	53.0		9.4	51.8	51.7		8.0	32.6	11.4		9.5	10 9.3	57.1	
9.4	26 15.8	19.6		9.4	35.7	25.4		9.2	49 1.1	45.9		9.4	38.2	27.3		9.1	15.5	48.6	K
9.5	18.3	35.7		8.4	40.8	51.5	K	9.1	7.4	44.8	K	9.5	0 17.4	2.4		8.2	43.4	24.2	
9.5	35.5	31.9		6.5	47.0	28.7	B	9.4	21.8	58.1		9.1	40.6	43.1		9.5	46.3	33.6	
9.5	40.5	30.4		8.8	39 5.0	3.4		9.3	26.9	9.4		8.9	54.4	6.8	K	9.5	11 15.4	31.3	
9.0	42.0	44.2		4.7	8.1	7.6	G	8.7	54.9	39.5	K	9.5	1 1.8	15.9		9.4	20.0	0.7	
9.2	47.4	24.4		9.5	39.0	33.5		9.1	50 12.4	5.9	B	9.5	30.2	23.5		9.4	32.7	28.6	
9.3	48.0	51.1		8.7	42.3	27.0		7.3	13.9	51.5	K	9.3	30.9	51.8		9.0	45.5	11.6	

1601—1660				1661—1720				1721—1780				1781—1840				1841—1900			
	6ʰ		+39°		6ʰ		+39°		6ʰ		+39°		6ʰ		+39°		6ʰ—7ʰ		+39°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
9.3	12	2.0	8.8		7.2	22	54.7	52.8	L	9.1	33	45.3	49.8		9.5	44	50.5	45.0		9.0	55	0.5	20.0	
9.2		33.4	7.3		9.4	23	14.0	35.2		9.2		54.3	46.1		9.5		51.5	52.7		8.9		5.8	13.1	
9.4	13	0.6	20.4		9.5		29.1	16.7		9.5		59.4	29.6		9.4	45	3.2	55.2		9.5		12.6	54.3	
9.5		8.5	58.2		7.0		36.8	32.8	G	9.1	34	2.3	18.6		8.9		6.2	8.3	K	9.5		31.0	5.9	
9.5		20.1	15.5		9.4		40.4	12.8		9.5		19.2	49.8		9.5		6.6	19.4		9.5		38.0	5.1	
9.5		25.0	13.0		9.3		54.1	25.1		9.3		36.9	31.7		9.4		35.1	36.2		8.6		51.3	59.9	
9.1		32.5	48.6		9.5		56.4	58.0		9.5		46.4	42.8		9.5		35.1	8.5		9.0	56	7.2	33.9	B
8.3		44.7	49.4		9.5	24	7.0	26.9		9.0		58.0	57.7	K	7.7		50.2	43.3	R	8.7		16.2	27.8	
9.4		55.4	13.9		8.7		25.9	34.1		9.5	35	2.2	56.5	B	9.5	46	9.5	52.7		9.1		22.0	31.0	
9.3		55.8	46.5		9.3		26.4	20.0		8.3		3.3	57.3	K	9.4		24.2	22.9		8.8		24.5	2.3	
9.5	14	2.5	17.5		9.5		43.0	52.7		7.0		7.2	30.7	K	9.3		26.4	55.0		8.8		27.1	58.6	
8.2		3.1	10.6	B	9.0		45.1	7.7		9.1		17.6	50.5		9.3		49.2	35.8		9.5		42.2	39.7	
9.2		34.0	27.6		8.8	25	1.4	9.8		9.1		27.3	49.7		9.3	47	47.2	32.1		9.5		50.3	10.3	
9.1		59.3	8.8	K	9.5		28.9	52.5		9.5		48.7	14.9		9.3		49.0	45.1		9.5	57	6.0	30.3	
9.0	15	1.5	28.6		9.4		32.0	7.5		8.7		54.3	26.1		9.5		50.3	54.5		9.4		38.7	16.2	
9.2		4.4	30.3		9.5	26	5.3	27.8		7.0		58.8	6.8	K	9.1	48	0.6	35.4	B	9.1		57.2	12.2	
8.5		30.4	42.2		9.5		5.8	55.0		9.5	36	17.0	42.2		9.5		43.9	32.8		8.2	58	6.2	51.7	
9.4		32.0	8.6		9.3		10.4	3.6	K	9.4		20.2	29.9		9.5		45.8	21.0		9.5		7.0	22.4	
9.5		41.4	10.1		9.3		48.9	3.0		9.5		37.1	42.7		7.3		49.2	43.0	K	9.3		8.0	30.5	
9.3		44.0	48.3	B	9.2	27	3.4	35.5		9.4	37	9.1	43.8		9.3		49.7	18.5		9.1		13.2	6.1	K
9.3		44.4	6.1	B	9.4		4.4	41.6		9.2		13.2	5.0		8.0		54.2	57.8	R	9.4		21.3	15.5	
9.3		46.4	29.9		9.0		15.4	33.0	K	9.5		14.0	10.5		9.5		57.3	2.0		9.4		22.2	27.3	
9.5		50.1	33.9		9.5		19.0	3.6		9.5		16.9	47.0		8.3	49	14.2	31.3	K	9.5		39.0	25.8	
9.3	16	11.3	58.0		8.9		48.2	54.5		9.5		25.8	56.1		9.5		22.4	33.9	B	9.0		40.2	33.1	B
9.2		13.4	6.9	K	8.9		56.4	31.5	K	9.5		29.3	1.5		9.5		37.9	34.6		9.3		47.0	41.6	
9.3		14.6	55.5		9.5	28	5.0	35.5		9.2		54.2	6.1	K	8.9		44.2	59.9		9.5		51.1	34.0	
9.0		20.0	53.5		9.4		19.5	52.5		9.2	38	10.2	58.7		9.3		47.6	13.0		9.3		52.5	54.2	
9.4		26.7	35.2		9.5		24.9	2.1		9.0		18.0	15.7		9.5	50	1.3	31.3		9.1		58.2	33.7	
7.2		31.4	45.1	K	8.0		32.4	14.4	L	9.5		26.2	17.2		9.5		7.2	12.8		9.2	59	0.2	32.1	
9.4		34.5	37.7		6.5		36.4	31.0	K	9.1		31.2	44.4		9.5		10.5	58.7		9.5		5.7	0.8	
9.5		57.0	38.0		9.2	29	2.5	3.8		9.2		31.7	42.2		9.5		21.2	35.7		8.9		12.7	38.3	B
7.8		58.1	3.2	K	9.4		9.3	50.2		9.2	39	1.5	50.8		9.4		24.7	10.7		9.5		24.9	3.9	
8.9	17	21.0	21.2		9.4		48.4	23.0		9.5		23.9	52.8		9.5		30.7	34.7		9.4		27.8	52.1	
7.9		36.3	55.2	K	9.0		50.2	47.9		7.3		48.2	37.9	K	8.9		32.2	54.9	R	9.2		56.2	56.7	
7.6	18	29.3	11.7	B	9.4		53.1	13.4		8.0	40	6.2	52.5	R	9.3	51	5.1	42.8		9.3		56.6	34.6	
9.4		38.4	25.4		8.8	30	14.4	27.0		7.6		16.3	53.0	L	9.2		7.1	39.3		8.5	0	5.1	17.6	K
7.4		44.4	3.2	K	9.3		16.5	57.7		9.4	41	0.2	0.6		7.9		12.2	22.4	K	9.5		46.0	1.2	
9.5	19	3.8	13.1		9.2		28.1	30.8		9.3		4.2	47.4		8.8		16.7	3.1		9.5		49.3	42.5	
9.3		5.4	42.7		9.4		42.8	54.4		9.4		17.0	38.2		9.4		29.2	59.9		9.5		52.3	58.6	
8.8		6.1	33.0		8.7	31	3.3	58.6	B	9.5		32.5	42.6		9.5		31.7	55.9		9.4	1	2.5	7.6	
7.4		11.5	44.6	L	7.5		6.8	22.0	L	9.0		38.2	27.5	K	9.5	52	21.0	9.8		8.5		18.7	19.1	
9.4		32.4	4.3		9.2		11.8	48.1		9.2		38.2	24.9	B	8.8		21.3	22.5	K	5.4		41.8	32.9	K
9.3		39.5	9.2		9.5		18.1	57.8		9.0		50.2	34.7	K	9.4		22.5	5.0		8.8		41.8	37.3	K
9.3		58.3	38.0		9.4		43.8	49.7		9.2		54.1	22.1		9.5		29.4	9.3		9.0		46.4	47.8	
8.3	20	2.4	3.1	K	8.9		44.1	44.7		8.5	42	0.2	59.1	K	9.5		49.7	8.9		9.4	2	9.5	11.2	
9.4		26.4	27.1		9.3		52.9	56.1		9.4		7.0	52.5		8.2	53	10.6	37.6	K	8.6		19.5	50.2	K
8.6		29.0	59.4		9.5	32	2.3	22.3		9.1		15.0	53.8		9.2		25.7	22.3		9.5		34.8	12.0	
9.5		30.7	42.2		9.4		14.6	24.5	B	8.8		19.7	7.5		8.8		34.1	52.7		9.4		35.7	45.9	
7.0		56.6	50.8	K	8.6		15.2	47.7		9.2		42.5	33.0		9.5		35.0	1.5		9.5		57.5	45.9	
8.7	21	1.2	15.5		9.4		17.5	41.4		9.2		44.1	17.9		9.5		41.3	14.3		9.5	3	20.7	38.2	
9.5		17.0	52.3		8.1		26.3	9.9	K	6.3	43	3.4	2.3	S	9.5		51.6	56.2		9.1		55.6	28.5	K
9.5		31.0	25.4		8.8		31.8	46.2		8.1		38.2	56.9	K	8.8	54	4.2	42.0	K	9.5	4	19.0	12.9	
9.5		48.6	32.8		7.0		34.6	1.8	K	9.0		44.7	32.8		9.4		6.2	42.8	B	9.0		21.1	23.6	
9.4		49.4	9.8		8.6		53.4	25.1		7.3		53.3	20.5	R	9.1		12.0	27.4		9.5		23.8	21.4	
8.9		58.4	50.3		9.4	33	6.8	29.1		9.2	44	6.9	24.2		9.1		29.4	29.6	B	9.5		29.7	27.7	
9.2	22	24.6	42.6		9.0		13.4	41.6		8.9		10.7	50.1		9.1		36.4	41.5		9.4		37.1	26.3	
9.5		27.4	9.5		9.5		28.2	37.3		9.0		21.2	7.1	K	8.9		41.2	11.1		8.9		38.1	53.8	K
9.5		50.9	4.4		9.4		29.2	37.8		9.5		33.6	27.8		9.5		49.7	55.3		8.9		43.3	48.6	K
9.2		50.9	9.4	B	9.1		37.3	48.2		9.4		36.2	33.5		9.2		50.0	36.3		9.5		52.7	53.2	
8.6		51.3	22.6		8.8		39.3	19.0	K	9.4		43.1	17.9		9.3		51.3	28.6		9.5	5	9.8	19.5	

1901—1960				1961—2020				2021—2080				2081—2140				2141—2200			
	7ᵘ	+39°			7ᵘ	+39°			7ᵘ—8ᵘ	+39°			8ᵘ	+39°			8ᵘ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	5 50.1	19.2		9.0	22 31.0	58.0		9.3	43 35.3	17.0		9.5	7 19.9	53.8		7.6	33 13.8	34.3	K
9.3	6 33.0	0.8		8.5	53.7	19.8	K	7.7	36.6	50.3	K	7.6	8 18.7	14.7	B	9.5	23.9	36.5	
9.2	34.4	5.7	K	9.5	54.8	59.7		9.4	43.8	24.3	B	8.4	42.6	26.2	K	7.7	46.1	19.4	B
9.3	43.3	23.8		9.3	23 12.9	1.9		9.5	45.7	10.5		9.3	48.8	25.8		9.2	47.0	21.6	K
9.3	44.0	40.1		9.4	12.9	24.4		9.2	50.4	27.1		8.8	9 38.4	30.1	R	9.3	48.8	8.4	B
9.5	7 26.1	46.8		9.0	37.5	43.2	K	9.1	44 7.2	54.8	K	9.2	10 17.4	25.6		9.2	50.0	31.8	
9.4	35.0	38.4		9.0	39.6	46.0	K	9.5	36.8	38.7		9.4	35.3	8.8		9.2	34 48.4	15.6	
6.6	48.4	9.0	G	9.5	48.9	40.8	B	9.3	45 17.7	29.8		9.2	59.3	8.0	B	9.3	36 5.7	48.9	B
9.5	59.3	41.6		9.3	49.3	3.5		9.4	19.0	6.7	B	9.0	11 0.7	23.6		9.5	18.3	51.1	
9.5	8 1.5	20.8		9.5	49.8	17.5		9.5	21.5	17.4		8.2	39.2	19.9	K	9.5	44.8	31.2	
9.5	17.5	56.0		8.5	24 12.2	0.3	K	7.0	46 8.6	40.4	K	9.5	44.3	50.5	B	8.9	48.3	7.3	B
9.2	32.0	48.3		9.1	25 3.3	14.5		9.5	47 19.5	40.7		9.5	12 37.5	30.5		8.5	37 12.1	0.7	B
9.3	36.9	19.5		9.5	26 0.3	28.1		9.5	55.7	29.2		9.4	58.0	55.6		9.5	22.9	15.0	
9.2	37.3	12.7		9.3	4.2	12.5	K	9.4	48 5.1	44.5	B	9.1	13 13.5	28.2		9.0	57.8	9.5	
9.5	42.8	5.4		9.5	47.8	41.3		9.2	7.5	5.4	K	8.2	15 2.0	56.9	K	9.5	38 21.7	3.1	
9.3	44.1	31.6		9.2	27 15.2	12.5		9.5	16.4	49.6		9.4	7.2	13.3		9.5	32.9	14.0	
9.2	44.3	12.1	B	9.2	17.0	24.2		9.1	23.2	14.2	K	8.5	35.4	42.7		8.8	47.0	8.0	K
9.3	9 7.2	3.6		7.8	35.5	11.2	K	9.5	40.0	1.6		9.3	16 7.4	0.2	K	9.2	40 30.0	47.6	
9.4	10 0.6	30.6		7.3	59.0	11.2	K	9.2	40.6	7.6	K	8.8	56.9	31.8	K	9.1	35.5	46.4	
9.5	11.5	36.4		9.1	28 27.5	49.6		9.0	49 6.9	48.9		9.5	17 2.9	51.5		8.0	41 26.2	0.1	K
9.5	11.7	57.5		9.5	30.1	34.5		9.1	48.7	52.3		8.3	13.8	29.2	K	8.3	42 29.7	25.9	
9.5	26.2	0.6		9.5	31.6	23.2		9.2	50 19.1	1.1	K	9.5	48.1	12.4		9.5	43 4.9	40.5	
8.3	11 21.1	20.4	K	8.6	29 36.3	7.5	K	8.9	51 21.0	45.8		9.3	18 44.5	44.4		8.5	22.1	56.4	K
9.4	43.5	26.5		9.4	30 21.1	38.7		9.5	24.0	16.5		9.0	47.9	21.0	K	7.0	44 46.8	48.0	K
9.1	49.4	2.7	K	9.5	39.0	11.2		9.5	51.4	16.5		9.5	19 8.6	25.8		9.5	45 6.7	21.0	
8.2	12 12.7	24.6	K	9.5	44.4	55.8	B	8.7	54.8	8.0	K	7.8	40.7	21.9	K	9.4	36.3	29.7	
7.3	19.6	15.8	G	8.9	59.2	59.6	K	9.3	52 48.5	57.1		8.5	20 10.3	47.7	K	9.3	42.4	33.8	
8.7	53.3	14.2		7.8	31 22.7	32.0		8.2	54 20.1	1.4	K	9.5	42.4	20.0		9.1	45.2	43.1	
9.5	13 21.9	21.5		9.3	32 34.3	56.0		9.1	36.0	10.4	K	8.2	49.5	51.7	K	9.5	46 7.3	7.7	
8.9	49.8	0.8	K	9.5	33 14.0	8.3		9.3	42.8	47.3		8.5	56.8	4.1		9.4	11.3	58.6	
9.5	55.4	3.2		9.0	19.0	36.7	K	9.4	55 13.9	48.1		9.5	21 30.5	43.5		9.0	18.4	56.6	
8.2	14 14.9	24.8	K	9.2	19.8	45.3	K	8.7	15.5	8.0	K	9.5	31.0	51.0		9.4	32.1	52.3	
9.5	21.1	49.0		9.4	36.2	42.6		9.5	56 17.3	52.3		9.1	53.3	56.3		9.5	35.0	12.6	
9.3	15 58.4	16.0		9.5	51.0	56.8		9.4	38.7	14.8		9.5	55.0	12.5		7.8	47 2.7	22.3	K
9.2	16 3.9	40.0	K	9.3	55.2	51.2		9.5	40.8	1.6		9.5	22 1.9	51.0		9.4	12.0	16.0	
9.2	4.3	33.0		7.7	34 22.5	10.9	K	9.0	50.2	25.5	K	8.5	3.0	36.4	K	9.5	48 2.2	58.6	
9.4	19.2	37.6		9.2	33.2	1.8	K	9.3	57 14.0	9.8	B	9.5	23 17.0	43.0		9.5	3.5	41.7	
9.3	26.7	2.2	B	6.8	35 5.1	55.5	K	9.1	54.8	22.0	K	9.1	24 11.0	43.4		9.5	59.4	30.2	
9.4	34.0	5.9		9.5	38.3	7.2		9.5	58 39.8	12.9		9.5	12.4	22.9		9.0	49 31.9	9.1	
9.5	45.3	24.3		9.1	41.9	3.0	K	9.4	59 10.6	59.0		9.5	46.9	16.0		9.5	59.0	30.8	
9.5	45.6	41.8		7.4	52.2	53.4	K	9.3	22.5	19.1		9.5	25 2.2	1.7		9.0	50 43.0	21.6	
9.5	17 1.0	36.3		9.5	36 46.1	27.6		9.0	0 9.2	29.5	K	9.3	7.1	58.5		8.9	51 0.9	32.5	
9.5	19.4	28.0		9.5	53.2	50.2		9.3	19.5	55.3		9.5	37.0	15.5		9.0	24.5	8.0	
8.8	25.5	13.7	K	9.5	37 18.1	9.6		9.5	38.8	7.2		9.5	43.2	27.9		9.3	26.1	48.6	
7.0	31.4	36.7	K	9.5	43.2	52.6		6.5	1 44.7	9.8	G	9.2	26 24.7	2.4		9.5	52 34.8	42.5	B
9.4	41.7	8.0		9.1	59.7	58.5	K	9.5	2 50.3	39.9		9.5	58.9	29.2		9.1	55.1	15.0	
9.5	18 0.9	35.9		9.4	38 39.8	47.2	B	9.3	51.5	31.9		7.7	27 8.2	54.6	K	7.5	53 1.6	13.4	K
8.6	1.2	30.0	B	9.5	52.9	51.0		7.5	3 13.1	54.1	K	9.2	28 5.4	29.5		9.3	16.2	21.8	B
9.2	8.6	25.3	B	8.7	54.3	39.4	K	9.5	40.1	34.3		9.5	29 40.0	33.5		8.8	17.7	25.6	K
9.3	35.1	21.7		9.4	59.7	32.0		9.5	49.5	32.2		8.7	30 6.9	4.3	K	9.5	54.3	58.8	
8.5	19 0.3	31.0		9.0	39 39.4	44.9		9.1	58.6	14.7		9.5	16.1	1.4		9.2	54 8.4	6.1	
9.0	12.7	19.2		9.2	39.7	21.1	K	9.4	4 9.8	1.7		9.5	26.6	5.6		9.5	28.5	29.5	
9.0	19.8	9.5	K	9.5	54.5	49.7		9.5	13.5	10.5		9.5	34.5	10.0		7.0	30.5	17.9	K
9.5	58.1	28.7		9.5	40 9.8	55.1		8.4	19.2	27.0	R	9.3	35.2	26.5		8.8	52.4	24.6	K
8.3	20 12.9	36.8	K	9.5	15.7	44.8		9.0	20.7	55.7	K	9.5	31 3.0	20.9		9.5	55 16.0	35.9	B
9.5	27.0	0.1		9.5	41 6.9	21.0		9.4	22.5	33.4		9.2	4.5	33.3		8.9	24.2	7.8	L
9.5	21 31.3	53.4		8.4	33.2	10.9	K	9.2	50.1	47.7	B	8.8	34.6	30.8	K	8.7	36.3	4.8	K
7.0	22 5.4	11.0	K	7.4	42 51.8	54.0	K	9.5	5 11.1	1.7		9.5	32 21.1	4.6		9.0	56 36.8	20.6	
9.1	13.9	28.0		9.5	43 17.6	8.1		9.5	6 19.5	9.6		8.4	21.4	39.7	K	8.0	39.0	0.5	K
9.0	21.6	28.4		9.2	21.9	19.6	B	8.8	21.6	18.5		8.8	30.0	40.0	K	4.7	57 18.0	2.1	K

2201—2260					2261—2320					2321—2380					2381—2440					2441—2500				
	8ʰ—9ʰ		+39°			9ʰ—10ʰ		+39°			10ʰ		+39°			10ʰ—11ʰ		+39°			11ʰ—12ʰ		+39°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.4	57	29.8	0.2		8.7	24	58.6	42.9	K	8.5	1	39.6	6.5	K	9.0	41	9.9	38.7		8.0	15	45.0	28.0	K
8.0		42.9	16.3	K	9.3	25	5.7	4.8		9.4		53.0	14.9		9.5	42	21.1	25.9		8.5	19	7.3	22.7	K
8.9		49.0	41.2		9.1		11.6	13.1		9.5	2	21.5	14.8		9.2		37.6	4.4	K	9.5		47.7	54.8	
9.1	58	1.4	55.3		8.3		13.1	46.0	K	9.3		50.3	11.3		9.4	43	51.4	2.7	B	9.4	20	2.0	21.8	B
9.1		27.0	22.9		9.3		32.4	4.4	B	8.8	4	13.0	28.4		9.3	44	21.4	11.0		9.5	21	54.0	18.9	
9.1		27.8	14.9		8.6	26	17.2	27.3		8.5		29.7	7.5	K	7.1		21.7	5.5	K	9.5	22	27.5	22.3	
9.5		53.6	24.9		8.8	29	12.2	5.1		9.4	6	38.3	31.3		9.4		21.9	58.7		9.5		55.0	29.3	
9.5	59	32.0	7.6		9.4		28.6	26.5		9.5		38.7	15.9		9.4	45	37.3	57.2		9.4	24	17.6	0.5	
9.3	0	20.5	43.5		9.4		56.3	28.0		9.5		44.3	46.2		9.0	46	16.3	25.9		9.2		24.4	54.6	
8.8		31.5	16.6		9.5	30	30.8	55.4		9.5	7	25.0	10.8		9.5	47	17.3	3.0		7.8		26.2	43.1	K
9.4		52.3	18.6		7.0	32	23.4	36.9	K	8.5	8	25.3	14.4	K	9.4		58.8	17.9		9.0		43.0	52.8	
9.4	1	45.1	59.8	B	8.3	33	8.2	53.5	K	9.2		25.5	47.5		8.7	49	1.5	35.4		7.8	25	4.4	40.1	K
9.5		56.0	35.0		9.2		25.1	0.7	K	8.8		28.8	52.0		9.0	50	2.8	49.7	K	8.0		25.7	40.1	K
9.0	2	24.8	47.0		9.2		27.7	4.1	K	9.5	9	27.7	3.6	B	8.6		32.6	44.7	K	9.2	26	28.0	43.6	
9.4		25.0	4.2		8.5	35	22.7	5.7	K	8.8		36.5	31.9	K	8.8		50.1	2.0		9.2	27	2.5	51.6	
8.8		50.5	9.6	K	9.5		46.6	23.1		8.6		37.0	35.8	K	9.5	51	7.8	22.9	B	9.5	28	46.0	16.4	
8.8	3	6.5	23.6		9.0	38	33.1	46.6	K	7.8		59.6	49.8	S	8.2	52	25.0	2.4	K	9.5		53.5	2.9	
9.0	4	12.8	7.6		9.2	40	33.2	49.3	K	9.5	12	42.5	18.8		9.5		26.0	15.0		8.0	30	36.7	32.8	K
9.5		17.0	41.0		9.5	41	27.8	41.3		8.1	13	29.7	12.9	K	9.4		26.5	18.5		8.3	31	1.3	27.2	K
9.5		46.7	12.4		8.8	42	45.5	6.4	K	9.0	14	6.0	50.2		4.9		43.0	59.1	K	7.0		7.5	59.5	K
9.4		52.2	19.5		8.8		48.7	36.8		9.3		45.7	9.4		9.3	53	8.4	55.1		9.4	32	41.9	15.9	
9.0	5	8.8	38.9	B	9.4	44	9.2	24.6	B	9.3	15	4.2	10.4		9.5		54.3	19.5		9.5		48.6	32.3	
7.0		50.2	12.6	K	9.5		9.3	17.1		9.5		29.5	25.3		9.1	54	8.6	11.6	K	9.3		53.8	10.7	B
9.3		58.0	23.0	B	9.4		32.6	21.6		7.5		32.3	46.2	K	9.5		10.5	55.4		9.2	35	15.0	56.3	K
9.3	7	31.3	5.6		9.5		41.4	19.8		8.5		33.8	48.7	K	9.5		37.7	15.8		7.8	36	39.1	49.1	S
7.5	8	31.7	49.4	L	9.5	45	1.5	54.0		9.5	16	20.4	33.0		9.4	55	4.3	36.8		7.5		41.5	18.1	K
9.0	9	8.6	3.1		8.6		31.2	34.8	K	8.5		24.4	48.4	K	9.4		17.2	9.5		8.5	37	26.6	7.9	L
9.0		12.2	26.0		8.5		50.7	48.7	K	9.0		50.4	49.6	K	9.0		27.1	2.0	K	9.4	39	33.4	39.2	
9.3		36.7	53.5	B	9.2	46	11.8	55.3	L	9.4	18	36.7	1.5		9.4		43.1	50.0		9.0	40	52.7	38.3	
9.5		37.3	15.6		9.1	47	26.8	26.3		8.9	19	27.1	44.5		7.6		46.5	44.6	G	8.9	41	28.4	26.8	K
8.5		53.9	13.6	K	9.4		55.6	58.2		9.5		39.8	39.7		9.3	56	8.0	16.6		7.8	42	37.9	36.2	K
9.1	10	7.0	18.6		8.5		57.5	40.8	K	9.3		41.0	56.7		9.5		9.2	52.5		9.5	43	16.4	42.6	
9.2		48.8	46.0		9.4	48	20.5	0.6		9.5	20	21.8	41.6		7.1		12.7	38.4	K	9.2		28.9	28.8	K
9.3	11	0.4	6.2		9.5		46.1	58.7		9.4		30.8	9.0		6.2		27.2	1.0	K	9.5		55.5	11.8	
9.0	12	15.2	52.1	B	8.1	49	19.7	37.8	K	8.6	21	11.3	22.4	K	9.1		27.2	16.9		9.2	44	52.8	52.3	
9.3		23.0	46.1		9.5		21.3	58.3		9.3		17.5	1.8		9 2		34.7	30.8	B	9.5	46	47.4	31.3	B
8.3	14	21.3	45.9	K	9.4		47.8	40.5		6.2		39.3	39.8	K	8.7		37.3	44.8		9.4	47	34.3	7.4	
9.2		40.8	4.1	K	8.7		52.8	35.3	K	9.5		52.0	1.8		7.4		40.0	2.3	K	6.5		50.4	34.2	K
8.9	15	9.1	21.0	K	9.0	50	56.3	17.5	K	7.9	22	35.0	45.3	K	7.5		53.0	11.6	L	9.4	48	16.4	53.9	
9.3		20.1	28.0	B	9.0		57.5	30.8		9.0	23	6.5	44.8		9.5	57	20.1	42.1		9.0	49	51.2	35.8	
9.2	16	0.6	22.5		8.8	53	17.4	54.0	K	8.7		23.0	5.5	K	8.5		31.8	2.3	K	8.9	52	38.4	38.8	K
9.3		33.7	14.1	B	8.6	54	1.1	43.9	K	9.2	24	35.1	37.3		6.8		45.2	10.6	K	9.4	53	8.4	43.1	
8.4		38.3	57.8	L	8.0		8.6	57.6	K	7.4		42.0	57.7	K	8.6	59	26.3	44.3	K	9.5		49.6	50.9	
8.9		52.9	36.4	K	7.7		14.5	19.4	L	9.2	25	47.3	15.4	B	8.2	0	14.0	12.1	L	9.3		56.9	8.9	
9.3	17	31.4	43.4		7.7		17.2	59.7	K	9.1	26	45.5	16.9		9.1		45.7	5.6		9.3	54	21.9	49.2	
8.9		34.1	32.9	K	9.2		56.0	41.9		7.6	27	27.8	16.4	K	9.4	2	17.3	25.5		9.4		43.9	51.5	B
9.4	18	20.9	11.9	B	9.5	55	5.2	22.9		9.5	29	30.4	36.4		9.5		19.9	36.0		9.5		51.0	34.5	
9.5		55.8	36.6		8.8		7.0	14.4		8.3		30.6	30.7	B	9.3	4	39.7	55.8		9.1	56	33.3	0.4	L
9.5		59.5	51.6	B	9.0		59.6	22.5		9.3	30	34.7	48.8		9.5		40.4	18.0		8.9	57	12.1	27.8	K
8.5	19	45.2	16.1	K	9.5	56	26.5	20.4		7.8	31	51.5	8.5	S	9.0	7	45.3	35.5		9.4		27.6	30.3	
9.1	20	18.9	43.4		9.3	57	1.8	11.0		9.5	32	0.5	59.1		9.3	9	17.4	37.5		8.1		47.7	38.8	K
8.3	21	3.6	33.0	K	9.5		11.8	45.2		9.5	33	5.6	33.8		8.8		50.3	19.1		7.8		58.9	27.3	K
9.5		30.4	10.6		7.8	58	41.9	0.0	K	9.0	34	41.5	8.9		9.0	12	20.0	25.0		8.5	58	43.2	37.3	K
8.9		31.6	37.5	K	8.0		57.5	21.4	K	9.5	35	9.3	48.2		9.0		52.6	17.1		9.5	59	43.3	13.8	
8.5	22	32.8	14.1	K	9.5	59	31.2	15.5		8.5	36	11.1	7.4	K	9.4	13	5.8	54.3		9.5	1	55.0	35.3	
9.3		38.2	7.7	B	9.0		35.8	27.4	K	8.3		59.0	14.9		8.6		23.0	18.1		7.0	2	7.3	25.8	G
9.5		45.6	29.0		9.1	0	18.7	12.4		8.3	37	2.5	40.8	K	8.9	14	21.7	58.8		9.3		45.8	34.2	B
9.2	23	51.9	31.1	B	7.8		39.3	8.4	K	9.3		12.5	52.7		8.5		26.9	16.6	L	9.2		54.0	2.3	K
9.2	24	25.8	55.4		9.4		43.8	52.1		9.5		48.1	6.0		9.1		29.8	24.5		9.5	3	24.5	34.4	B
9.1		43.5	25.9	B	9.3	1	3.5	31.8		9.3	39	18.1	59.4	B	8.9		57.8	20.0		7.8		47.7	55.4	K

2501—2560					2561—2620					2621—2680					2681—2740					2741—2800				
	12ᵐ		+39°			12ᵐ—13ᵐ	+39°				13ᵐ	+39°				13ᵐ—14ᵐ	+39°				14ᵐ	+39°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.0	3	59.5	59.3	K	9.4	40	33.4	12.0		9.4	7	49.3	34.3		9.3	40	54.1	6.8	B	8.4	9	45.7	48.6	
9.3	4	5.4	51.7		8.8		37.3	42.3		9.5	9	30.0	6.0		9.5	41	13.5	5.5		9.4	11	32.6	14.2	
8.1		32.2	34.6	B	9.5	41	46.4	22.4		9.3		54.4	40.3	B	8.5		29.3	36.1	K	9.4		44.4	55.7	
9.5	6	43.7	35.5	B	9.4		53.5	2.9		8.2	10	5.0	13.8	K	9.4		37.3	41.2	B	7.5	12	12.6	39.6	K
7.8	8	1.8	33.5	K	9.3	42	20.7	4.9	B	9.5		45.3	21.0	B	9.0	42	4.2	54.8	K	9.3		15.8	45.6	B
7.2		12.1	27.0	K	9.2		25.3	51.3	K	9.3	11	15.8	9.0		8.8		8.6	14.2		9.1		53.4	52.5	
8.9	10	7.9	42.7		9.5		44.8	54.4		9.2		23.1	25.4		9.5		55.7	44.5	B	9.2		54.7	20.7	
8.3		9.7	27.3	L	7.5		49.8	9.5	K	9.0	13	12.5	22.5		9.5	44	59.1	35.6		9.3		56.3	32.6	
9.5	11	47.5	35.7	B	8.5	43	10.3	29.6	B	8.9		15.3	40.3		9.5	45	21.2	33.9	B	6.8		58.4	25.2	K
9.4	12	30.1	11.4		8.8		26.9	35.4		8.9		17.6	57.0		9.5		29.4	39.3		6.0	13	51.1	28.8	K
8.6	13	14.9	59.2	B	9.3	44	46.8	9.6	B	7.5		22.5	9.0	L	8.5		58.9	32.3	B	8.9	14	1.7	4.6	K
9.4		16.3	53.5		9.3	45	6.7	20.0		8.6		56.3	26.1	B	9.5	46	9.1	34.3		9.5		5.2	51.1	
9.3		21.3	7.5	B	9.0		52.1	28.4	K	9.3	14	2.2	2.2		9.5		30.0	41.5		9.1	15	9.5	21.8	
9.4		52.5	54.2		9.5	46	26.9	28.5		8.8		31.7	38.0	K	8.6		52.7	1.7	K	7.8		11.0	38.2	K
9.5	14	2.3	24.3		9.3		28.6	0.5		6.9	15	1.7	39.0	K	8.8	47	50.2	26.7		9.5		29.0	48.1	
9.4	15	12.8	31.4		9.4		51.6	10.6		9.5		25.0	44.5		9.5		51.4	34.1		9.3	16	19.5	35.2	B
9.5		52.9	33.8		9.2	47	14.8	51.7	B	8.7		57.3	31.3	B	9.3	48	45.7	50.0	K	9.3		25.8	38.8	
9.5		57.4	2.0		9.2		20.5	4.5		9.4	16	7.9	32.1		9.5	49	56.3	5.3		8.1		45.4	8.6	B
7.5	17	44.3	7.5	K	9.1		48.0	26.9	K	8.3		24.2	8.2	K	9.4	50	19.8	17.2		8.8	17	6.5	38.2	
7.8	18	18.1	9.0	K	3.0	49	14.3	6.1	B	8.6		41.0	27.6	K	9.5		46.3	10.8		7.3		38.5	59.8	K
5.4		42.0	49.6	K	9.3		20.8	49.3		8.5	17	2.4	29.5	K	9.4		56.6	28.7		9.3	18	23.5	47.2	K
9.0		48.4	25.3		9.5		31.6	54.4		9.0		13.0	17.2		9.1	51	1.3	7.8		8.6		24.5	5.4	K
9.1		55.4	11.1	B	9.0	50	16.9	43.3	K	9.1	18	40.2	41.0	K	9.4		32.1	19.2		9.5	19	8.0	22.6	
8.6		59.8	46.7	B	8.8	51	2.9	10.0	K	9.3		42.2	46.5		9.3		59.2	17.7		6.3		34.2	2.4	K
9.2	21	30.4	38.7	K	8.8		42.7	11.9	B	9.0	19	25.0	16.6		8.9	52	15.6	7.3		8.8	20	59.1	46.2	K
9.5	22	55.6	46.3		8.5		44.7	3.8	B	8.5	20	46.9	15.2		8.8		27.2	24.1		9.5	21	28.0	9.5	
9.5	23	47.6	33.8		9.0		48.7	4.0	K	8.6		56.7	54.5		9.4	53	42.6	17.2		9.5		47.9	31.1	B
9.1		58.1	56.2	B	9.5	52	5.2	49.2	B	9.1	21	29.3	50.5		6.5	54	15.6	44.0	K	8.8	22	9.0	19.3	
8.9	24	0.1	23.9		8.0	54	2.1	43.8	K	9.1		45.6	5.3		8.7		24.2	51.8	K	9.2		17.5	57.5	K
8.5		2.9	34.3		8.1		10.1	34.3	K	9.5	22	46.8	32.7		9.4		40.7	13.2		8.5		57.7	38.7	K
9.2		56.5	14.4	K	9.0		22.6	39.3		9.4	23	13.2	3.8		8.5		49.3	55.4	K	8.9	23	19.5	9.8	
9.3	26	7.6	33.8		7.7	55	36.6	36.2	L	9.5	24	1.9	25.1		9.4	55	22.4	43.9	B	9.4		43.4	51.3	B
8.7		21.7	57.9		7.7		38.0	39.5	K	9.5		22.8	58.0		9.4		43.7	37.1		7.5		53.6	30.4	L
9.0		29.2	25.0	K	9.5	56	8.2	36.9	B	9.4	25	40.7	38.6		9.0	57	53.2	37.6	K	8.8	24	33.0	10.3	K
9.0		30.4	25.5	K	9.5		25.0	41.9		9.3		45.6	5.6	B	9.4	58	10.3	56.0		9.5		55.2	34.2	
8.5		35.1	40.8		9.2	57	16.9	37.2	B	9.5		47.5	11.8		9.3		27.1	54.5	B	9.0	27	10.5	1.0	K
9.5	27	8.8	9.5		8.5		32.9	14.0		9.4	27	30.6	35.6		9.4	59	8.8	37.8		8.8	28	5.5	18.4	K
9.3		25.6	39.3		9.2	58	58.9	42.4		6.2		58.0	32.6	K	9.3		9.4	24.2		8.0		11.0	33.8	K
9.0	28	55.3	28.9		8.0	59	13.8	10.6	K	9.0	28	42.2	3.0	B	9.1		52.1	29.8	B	9.1		17.5	23.3	
7.3	30	35.9	28.3	L	9.3		32.4	30.0		9.5	29	13.3	10.8		7.0	0	21.7	6.7	K	9.3		52.5	9.5	
9.0	31	9.4	28.8		9.0		37.3	19.4		9.5		52.0	43.3	B	9.5		43.6	57.8	B	9.5		54.5	50.8	
9.3		39.8	45.2		8.6	0	3.3	45.9	B	9.0	31	38.7	55.2	B	9.5	1	33.8	8.3		9.3	30	28.3	54.6	K
9.5	33	58.7	40.9		9.5		18.6	37.2		7.2		43.5	55.4	B	9.2		58.9	56.0		9.5	31	18.0	1.0	
7.4	34	23.5	11.4	K	9.5		49.7	30.9		9.4		54.6	35.6		8.6	2	0.1	28.2	K	8.8		45.5	40.7	
9.1		50.5	28.5		8.9	1	1.3	55.7	K	8.0	32	22.6	7.7	K	9.0		3.9	57.6	B	9.3	32	1.0	53.2	K
9.3		59.7	29.0		8.6		8.9	55.0	K	9.0		31.2	34.6	K	9.0		17.7	1.8		9.0		5.2	28.3	
9.5	35	11.0	44.5		7.5		32.9	33.3	S	9.5		35.9	45.0		8.1	3	25.9	22.8	B	9.5		29.8	54.0	
9.3		31.4	57.9		9.0	2	21.5	16.9		9.0	33	13.2	15.2		9.4	4	26.9	25.0	B	9.2		33.5	50.0	B
9.3		36.8	53.3		8.8		30.7	7.4	K	9.5	34	44.5	17.0	B	9.5		39.1	45.6		9.5		37.8	57.1	
9.3		56.9	22.5		8.9		56.0	40.8		9.1	35	5.4	36.4	B	8.3		58.5	16.7	B	9.2	33	3.4	40.8	K
9.0	36	3.4	38.3		6.3	3	0.2	18.9	K	9.2		42.1	40.4		7.8	5	55.4	31.6	K	9.5	35	25.5	31.3	
9.5		46.3	48.3		8.3		19.7	50.7		8.2		57.3	40.7	L	9.5	6	20.3	3.8		9.2		26.3	23.3	
9.5	37	1.0	10.5		7.0		21.3	29.9	G	8.4	36	4.6	33.1	L	9.5		58.9	48.9	B	9.3		26.5	11.5	
8.6		23.8	13.9	K	6.2		23.0	16.4	K	9.5		39.5	55.6		9.4	7	17.6	32.7		8.8	36	51.6	19.8	K
9.4		37.3	23.5		9.4		48.2	50.3	B	8.7	37	2.9	58.8	K	9.0		47.6	26.1		9.5	38	26.4	6.0	
9.5	38	8.1	28.6		8.8	4	54.4	44.3		8.4	38	4.4	32.1	K	8.5		53.7	29.7	L	9.5		45.5	14.4	
9.3		15.5	34.3		8.6	5	26.7	39.3	K	9.4		28.6	8.8		8.2	8	5.4	47.1	G	8.6	39	19.0	36.8	K
7.8		42.9	9.5	L	9.5		43.5	30.3	B	6.0	40	2.6	13.7	K	9.1		29.2	6.7	K	9.3		54.6	46.5	K
9.5	39	5.7	54.7	B	9.0		51.7	6.4	K	8.5		39.0	15.5	B	7.4		35.5	57.5	K	9.5	40	40.5	59.9	
9.5	40	2.8	15.5		6.8	6	23.1	4.3	K	5.5		45.4	17.7	K	9.3	9	29.6	24.7		9.2	41	5.2	50.8	K

2801—2860				2861—2920				2921—2980				2981—3040				3041—3100			
	14ᵘ—15ᵘ		+39°		15ᵘ		+39°		15ᵘ—16ᵘ		+39°		16ᵘ		+39°		16ᵘ—17ᵘ		+39°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	42	19.5	2.9		9.1	12 51.8	3.0		8.7	45 0.6	2.8	R	9.5	16 54.8	28.2		9.2	41 51.9	33.0	
9.0		52.5	13.4	K	9.5	14 8.5	10.0		8.2	12.4	15.7		9.0	17 10.9	36.7	K	8.5	52.8	22.9	K
9.1	43	9.6	20.9	K	9.1	13.5	1.5	K	8.9	33.0	39.6	B	9.0	29.3	51.1	K	8.5	54.8	21.7	K
9.5	44	14.5	44.8		9.3	47.2	40.8		9.3	58.3	2.4	K	8.7	18 13.3	31.2	K	7.8	42 42.2	42.4	K
9.0	45	36.4	1.4		9.5	15 16.8	1.8		9.5	46 17.9	15.7		9.0	19 18.4	43.2		9.5	48.2	56.4	
7.7		59.7	42.2	K	9.5	16 4.9	56.5		9.5	47 7.6	54.0		9.4	25.0	7.7		9.5	43 57.3	23.5	
7.6	46	6.2	0.0	K	8.5	17 50.8	38.8		9.0	12.3	25.1	K	9.5	34.4	5.2		9.3	44 1.2	5.6	K
9.5		13.0	1.4		9.5	18 33.6	14.5	B	9.5	37.6	44.5		9.1	40.9	41.0		9.3	29.0	33.0	
9.1		33.8	20.3	B	8.8	19 23.3	1.5	K	9.2	48.8	37.1	K	8.5	50.3	46.0	K	8.7	46.9	30.5	K
9.4	48	47.7	1.9	B	9.5	20 7.7	56.7		8.5	49 10.8	9.3	K	9.0	20 35.4	7.3		9.5	45 2.5	7.2	
9.4	49	34.5	26.4		8.8	16.9	6.9	B	9.5	41.4	30.7		9.2	41.4	55.2	K	9.5	40.5	39.0	
9.3	50	36.7	46.8	B	8.8	21 48.4	59.6	S	9.3	50 22.6	21.2		9.3	21 0.7	23.6	B	9.4	51.8	7.2	
9.0		41.6	18.7	K	9.4	22 13.3	57.7		7.7	58.6	51.0	K	9.5	6.3	8.1		9.2	46 2.6	16.6	B
9.3		46.0	0.9	K	9.1	54.5	8.4	K	9.5	51 41.4	23.1		9.3	20.5	55.3	B	9.2	25.2	44.0	
9.5	51	14.3	39.3		7.0	23 8.0	14.9	K	9.4	52 34.2	41.1	B	9.5	32.9	43.9	B	9.0	47 13.6	10.1	K
9.3		30.2	21.3		9.5	24 48.3	15.1	B	8.8	53 26.4	39.5	K	7.5	59.7	10.7	L	9.4	24.4	10.5	
9.2		35.0	6.0		9.5	51.7	12.6		9.2	53.6	23.8	K	9.1	22 45.4	36.1		9.2	48 8.7	52.0	K
9.2		39.0	11.0	K	9.5	25 17.6	57.8	B	9.2	54 16.8	41.5		9.4	51.6	42.1		9.5	51 59.5	14.0	
8.2	53	4.5	5.0	K	9.4	36.0	37.8		9.5	32.6	7.7		8.9	23 39.3	24.7	K	9.4	52 10.8	25.0	
5.5	54	3.7	51.2	K	9.0	26 25.0	44.3		8.7	49.3	20.6	K	9.2	40.1	16.9	B	9.5	14.5	32.5	
8.9		29.6	33.6		9.1	25.2	46.3		9.3	55 0.0	42.0	K	9.1	59.3	22.7	K	8.3	51.1	56.1	K
9.4		37.0	45.3		9.2	25.5	22.8		6.7	47.1	34.5	K	9.2	24 17.3	3.7	K	7.8	53 32.3	56.2	K
8.8		39.9	55.3	K	9.3	37.5	13.9	K	9.1	56 3.9	23.7		9.1	25 9.1	55.4	K	9.4	52.1	38.0	K
8.3		42.4	25.1	B	8.9	27 6.3	52.2		9.5	57 21.6	25.6		9.3	30.4	51.0		9.3	58.2	46.4	K
9.5	55	57.5	42.3		9.3	26.4	8.2	K	9.3	58 21.8	49.1	B	9.5	55.1	43.1		9.4	59.1	21.9	
8.0	56	28.6	30.6	L	9.5	28 34.3	15.7		9.5	59 42.4	39.0		9.5	57.1	47.6		9.4	54 6.4	52.6	K
9.0	57	3.2	42.2	B	9.4	29 6.6	52.5		6.5	56.9	32.5	K	9.4	26 5.8	7.8		9.4	9.9	16.9	B
9.3		8.0	35.7		8.8	13.7	56.5	R	9.0	0 7.8	19.1		9.3	38.4	41.1	K	9.5	23.7	47.0	
8.3		27.5	26.3	K	5.0	55.4	31.0	K	9.2	57.4	32.5		9.2	48.9	31.1	K	7.0	55 13.4	20.6	K
9.3	58	7.8	3.0		9.1	30 59.4	51.0		8.4	1 17.4	2.9	B	9.0	55.6	9.7	K	9.5	33.6	56.4	
9.1		44.2	45.7	K	9.4	31 0.8	19.6		9.2	23.8	10.3	K	8.8	28 15.9	12.2	K	7.3	37.9	7.2	K
7.0	59	10.0	10.9	K	8.8	42.9	47.5		9.2	27.3	29.7	K	8.5	34.6	23.6	K	8.0	56 4.4	45.9	K
9.3		38.5	11.9		9.5	32 3.5	18.2		7.8	2 12.9	12.2	K	9.5	29 23.4	34.1		9.3	45.6	11.5	K
8.1	1	1.4	33.6	B	8.7	33 0.3	1.7	K	7.8	16.6	31.1	K	9.0	27.8	12.7	K	8.2	57 3.2	54.8	K
9.5		7.5	11.0		8.7	13.8	41.5		8.9	30.8	9.7	K	9.5	28.9	22.1		9.0	44.3	49.4	K
9.4	3	34.0	58.2		8.7	34 9.8	53.3	K	9.5	3 23.9	37.1		8.4	30 8.4	17.6	K	9.5	58 26.7	17.0	
8.0		51.9	58.7	K	9.5	21.5	40.8		9.1	4 47.8	11.3	K	8.8	53.4	50.5	K	9.5	0 8.0	22.1	
7.5	4	25.0	30.9	K	7.7	35 27.6	11.2	L	8.3	5 38.6	31.2	K	9.5	31 19.3	44.1		8.8	1 22.0	44.9	K
9.0	5	14.5	28.4	K	9.3	30.9	2.8		9.5	54.8	48.0		8.5	53.9	8.7	K	8.7	33.5	10.1	K
9.5		25.5	37.3		9.4	36 2.3	21.2		9.2	6 1.6	55.1		9.3	59.4	37.6		9.1	4 52.6	0.6	
8.0		42.0	30.8	K	7.0	6.1	1.8	K	6.0	7 1.8	25.2	K	6.8	33 9.0	51.9	K	9.5	5 25.6	51.4	
8.9		48.7	9.4	K	9.1	14.3	51.9		9.0	10.8	7.8		9.0	32.6	11.8	K	8.8	46.9	50.8	
9.3	6	4.5	45.3		9.3	37 1.3	47.0	K	7.5	47.9	43.1	K	9.1	34.3	51.6		8.5	6 7.5	16.2	
7.5		26.0	13.2	L	8.4	25.1	59.8		9.1	9 39.4	15.7		9.4	35 1.6	51.1	B	9.5	25.8	52.5	
7.5		29.0	13.0	S	9.5	38 14.8	45.6		9.0	51.9	43.1		9.5	46.4	56.6		8.9	42.0	32.5	
7.3		53.1	30.9	K	8.5	48.6	23.2		9.3	53.8	31.3		9.3	36 5.6	0.8	K	8.0	45.6	26.1	K
8.0	7	44.5	11.5	K	9.2	50.3	40.1		8.8	56.8	56.2	K	9.2	44.7	55.8	K	8.9	7 9.9	5.2	K
9.0		59.3	13.9	K	9.0	39 9.4	52.1	L	9.0	10 41.9	20.7		9.3	37 17.8	23.1		9.4	34.4	53.8	
9.4	8	0.5	5.0		9.5	33.6	0.2		9.2	42.8	45.1	K	3.0	56.2	11.0	K	9.0	37.7	42.5	K
9.4		28.7	14.9		9.0	55.9	21.1	K	9.3	11 32.0	49.2	B	9.5	56.3	53.1		9.4	8 12.5	32.5	
9.4		39.9	51.1		8.7	40 47.6	33.6	R	9.0	12 8.9	21.7		9.2	38 25.1	3.0		7.2	35.7	10.1	K
8.3		41.7	31.5	B	9.0	56.6	11.2	K	9.2	13.8	52.5		9.3	41.7	34.3		9.4	9 21.5	34.0	
8.8	10	19.0	35.3		9.0	59.3	41.0	R	9.3	14.4	50.5		9.4	56.0	9.6		9.0	32.9	17.1	K
8.8		26.5	13.8		9.5	41 10.9	21.6		9.5	40.5	24.2	B	9.5	39 1.3	2.7		8.7	10 35.3	2.6	K
9.3		41.6	23.9		8.4	13.8	17.7	K	9.3	42.0	35.7	B	9.5	32.7	57.1		9.3	35.8	36.5	
9.5		49.7	3.5		9.0	40.8	40.1	K	9.0	13 8.4	17.7	K	9.3	41.6	24.8	B	8.8	11 18.7	20.1	K
9.4		54.1	48.7		9.5	45.6	19.3		8.5	14 9.3	8.2	K	8.0	40 37.1	40.0	L	8.7	31.5	31.0	K
8.2		59.7	19.6	B	8.9	42 0.8	27.2	K	9.3	16 24.9	57.0	B	8.4	42.7	26.1	K	7.0	12 5.9	38.5	K
9.3	11	9.5	15.2		9.5	30.4	30.1		8.6	30.5	16.7	K	9.0	46.1	16.5	K	8.7	19.2	20.6	K
9.1	12	46.0	11.0		9.4	44 33.6	50.0		9.4	40.4	56.9	B	9.2	41 29.8	27.6	K	9.5	13 29.3	38.5	

3101—3160				3161—3220				3221—3280				3281—3340				3341—3400			
	17ʰ	+39°			17ʰ	+39°			17ʰ	+39°			17ʰ—18ʰ	+39°			18ʰ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	13 31.5	42.0		8.8	29 27.8	46.5	K	9.3	41 20.0	20.3		9.4	52 36.3	19.7		9.5	5 57.1	1.4	
9.3	14 36.6	50.4		9.2	29.5	9.5		9.5	21.0	32.2		9.3	39.8	40.5		9.0	6 1.2	56.2	
9.2	43.6	1.7	K	9.2	36.3	20.5	K	9.0	27.8	5.1		9.2	49.4	17.3		6.9	25.2	4.3	K
8.1	53.9	25.9	K	8.5	46.1	41.1	K	9.5	35.7	59.4		9.5	53 5.0	40.5		9.5	37.6	23.6	
8.9	58.6	56.7	K	9.4	30 13.2	35.2		9.5	41.6	9.9		9.4	8.1	53.8		9.1	44.4	46.3	K
9.1	15 8.7	13.6	K	9.5	41.5	37.5		9.1	44.2	22.0		9.0	13.5	2.3		9.5	46.8	12.2	
9.5	34.2	51.4		8.8	56.6	26.6		8.7	58.8	6.0	K	9.4	57.4	58.3		9.5	7 2.9	12.7	
8.5	57.1	14.8	K	9.0	31 32.7	12.7	K	9.3	42 14.7	49.9		9.5	54 7.3	1.6		9.2	3.0	23.8	
9.3	57.1	30.8		8.8	38.4	54.0		9.1	37.4	9.9		9.5	8.7	43.1		8.9	9.1	57.9	
9.5	16 15.4	49.9		9.3	41.4	6.3		9.4	51.1	6.6		9.5	24.8	26.9		9.4	34.8	31.1	
8.7	23.3	22.6	K	9.3	43.4	6.2		9.5	58.5	25.3		9.4	30.9	52.2		9.2	34.8	56.2	
9.2	29.3	31.8		8.7	58.6	57.8		9.5	43 7.4	21.3		9.5	35.1	33.1		9.5	45.5	37.1	
9.5	38.9	21.5		8.6	32 8.0	8.1	K	8.4	41.0	53.9	L	9.4	52.8	57.4		9.5	52.4	36.4	
9.5	50.4	27.3		9.4	10.1	39.3		9.4	46.9	27.4		8.6	55.0	1.0	K	9.4	8 3.6	10.7	
9.2	17 10.8	49.9		9.5	33 13.0	9.7		9.1	47.5	20.5		9.3	55 2.1	33.2		9.3	8.5	8.7	
9.2	23.6	6.1	K	8.0	14.7	48.6	K	9.5	44 12.0	36.8		9.2	15.7	57.4		8.6	15.7	18.1	
9.5	32.7	18.0		9.4	19.9	25.5		9.5	19.8	49.7		9.5	17.2	43.9		8.5	21.4	25.7	K
9.1	35.0	51.7		9.5	19.9	16.9		6.8	54.4	39.0	K	9.4	36.8	40.2		9.5	31.2	46.2	
9.5	18 3.4	48.7		9.5	49.6	57.3		8.8	59.5	53.1		9.2	51.7	7.2		9.5	36.8	44.7	
8.2	19 11.0	53.2	K	9.5	58.8	8.7		9.5	45 4.6	22.6		8.0	56 22.5	2.0	K	9.5	37.2	20.0	
9.0	23.5	48.6	K	8.4	34 2.7	0.7	K	7.7	48.4	33.5	K	8.9	37.4	45.0		9.5	39.0	31.6	
8.6	29.6	45.0	K	9.5	22.0	20.1		7.7	54.5	35.5	K	9.5	57 11.2	2.8		8.3	46.4	41.7	K
8.4	31.5	6.7	K	9.5	24.2	14.9		9.5	46 14.8	22.2		9.5	38.4	10.3		9.5	9 0.3	40.7	
8.5	47.4	19.0	K	9.5	39.5	25.0		9.2	22.3	38.4		8.5	59.6	50.3	K	9.5	18.4	18.7	
8.0	49.4	20.5	K	9.5	50.8	7.0		9.3	47 11.5	47.9		9.5	58 4.0	24.3		9.5	52.8	2.5	
9.1	53.0	38.2	K	9.5	35 7.9	46.2		9.0	13.0	16.0		9.0	8.5	17.7		7.7	10 8.5	41.4	K
9.5	53.1	40.8		9.5	10.7	4.3		8.6	14.5	19.8		9.5	24.7	25.9		8.3	12.4	50.8	K
9.3	55.4	52.4		7.7	21.9	49.5	K	8.6	32.8	24.2		8.5	30.3	21.1	K	9.5	11 5.4	42.9	
9.5	20 11.0	28.0		9.3	23.4	57.5		9.3	39.1	38.6		9.0	59 2.3	31.9		7.8	16.8	20.4	K
8.5	24.2	48.9	K	9.5	36.5	58.0		9.5	43.9	45.0		7.0	21.2	28.7	K	9.5	18.7	5.4	
9.2	43.1	13.5		9.5	37.7	15.2		9.5	53.8	18.5		9.5	39.7	47.6		8.8	25.5	19.9	
9.5	21 22.8	9.8		8.8	40.2	9.4	K	7.5	48 20.7	43.4	R	8.8	44.1	39.9		9.5	12 17.2	36.4	
8.6	22 22.7	43.1	K	9.5	46.3	56.8		9.5	21.4	46.5		9.5	0 2.4	46.0		9.3	45.0	50.4	
9.3	24.5	57.9		9.5	55.4	42.1		8.5	25.4	19.8	K	8.3	16.4	43.8	K	9.4	45.6	45.4	
9.5	56.6	34.0		9.2	58.0	49.7		9.5	29.4	42.0		9.4	38.6	38.2		9.5	13 2.5	35.8	
9.5	23 6.0	58.7		9.5	36 20.3	0.2		8.6	44.7	29.4	K	9.3	40.9	50.9	K	9.5	21.0	58.5	
9.5	18.0	1.3		9.0	21.0	21.4		9.5	50.1	40.4		9.5	55.8	27.9		9.5	33.7	17.0	
9.4	54.9	58.2		9.0	58.8	22.5		9.5	49 7.2	48.5		9.5	56.1	36.7		9.5	53.1	26.6	
9.2	24 9.5	22.1		9.1	37 34.4	12.6		8.2	18.5	29.4	K	9.2	1 42.7	52.9		9.5	14 6.2	33.2	
9.2	10.0	31.5		9.5	36.3	53.6		8.3	39.9	16.0	K	9.0	52.2	6.8		7.5	12.4	12.5	K
8.5	12.2	44.7		9.5	47.9	34.5		9.1	56.0	55.0		8.8	58.8	35.5		9.5	20.6	41.5	
9.2	38.0	12.9	K	9.1	56.2	21.2		9.0	50 1.6	50.0	K	9.5	2 19.3	9.9		8.4	24.7	41.9	B
9.1	50.4	36.5		9.2	38 10.8	46.6	K	8.8	3.7	43.2	K	9.5	19.8	23.0		7.4	58.4	2.4	K
9.0	53.4	15.6	K	9.4	14.5	45.7		8.6	5.5	9.9		8.7	53.5	6.2		9.4	58.9	12.8	
9.4	25 26.3	7.9		9.2	59.4	45.9		8.8	11.2	25.0		8.6	55.7	3.9	K	7.8	15 3.8	32.4	
9.5	46.5	39.4		9.5	39 5.7	22.5		9.5	16.1	20.9		9.5	3 0.5	38.0		8.9	7.6	38.4	
6.5	50.4	0.3	K	9.2	14.3	28.2		9.0	27.0	12.1		6.8	17.6	53.8	L	9.4	17.6	47.2	
9.4	26 24.8	39.3		9.3	15.5	9.2		9.5	27.4	14.7		9.4	29.2	43.1		8.6	21.4	0.2	K
9.1	44.4	50.5		9.5	47.8	25.0		8.3	39.8	31.0	K	8.9	38.9	4.7	K	9.3	36.0	15.2	
9.5	50.0	13.7		8.9	40 3.1	46.5		9.5	48.0	10.5		8.0	55.0	2.9	K	9.3	43.9	40.7	
9.5	27 2.5	44.6		9.5	10.7	25.7		9.1	48.1	30.5		9.1	4 22.4	8.2	K	8.0	46.4	48.9	
9.4	38.5	36.8		9.5	14.4	42.2		9.1	51.3	37.1		9.5	33.5	0.5		9.4	16 23.5	13.0	
9.3	44.2	52.5		7.9	20.6	3.4	K	9.5	51 11.0	2.7		9.1	36.9	38.6		9.5	24.6	45.6	
9.5	28 14.0	7.8		9.2	35.2	35.9		7.6	25.0	28.0	K	8.7	42.0	3.3	K	9.5	30.8	53.2	
9.2	22.2	37.9		8.1	39.1	24.7	K	9.5	26.9	36.3		8.9	47.6	38.9		9.2	32.1	15.7	
9.0	22.4	31.1	K	9.5	48.7	6.1		9.3	52.8	12.5		7.4	5 8.4	51.3	L	9.2	33.9	21.1	
9.2	43.6	59.0	K	8.8	41 2.0	38.8	K	9.5	52 3.6	10.1		9.5	15.2	20.4		9.5	40.1	4.4	B
9.5	29 1.1	48.8		8.9	8.5	29.4	K	9.5	22.5	50.3		9.4	21.7	48.7		9.5	55.4	49.5	
8.9	13.2	8.1	K	6.0	12.0	22.8	K	9.4	28.0	5.3		7.9	30.4	3.1	K	9.5	57.9	57.7	
8.9	13.9	2.5	K	9.4	15.2	53.0		8.8	33.7	43.3		9.3	42.3	46.5		9.4	17 20.0	43.8	

3401—3460				3461—3520				3521—3580				3581—3640				3641—3700			
	18ᵐ	+39°			18ᵐ	+39°			18ᵐ	+39°			18ᵐ—19ᵐ	+39°			19ᵐ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	17 46.7	26.9		9.5	29 46.0	3.4		9.4	40 47.4	36.3		9.5	50 41.0	47.7		9.5	1 9.0	46.7	
7.3	52.4	11.8	K	8.5	30 1.1	33.6		9.5	48.9	6.9		9.5	45.2	0.0		9.4	33.5	8.5	
7.8	18 15.5	26.8	K	7.7	15.3	24.9	K	8.8	51.1	33.1	K	9.4	51 6.2	45.6		9.5	2 0.2	0.7	
9.5	22.2	50.5		9.4	20.2	43.9	B	9.2	41 0.0	7.9	K	9.2	9.6	58.2		9.5	8.8	55.2	
9.0	29.4	38.9	K	9.4	26.4	38.7		8.3	21.0	6.4	K	9.1	12.6	55.1		9.5	27.0	33.7	
9.2	55.9	55.8		8.4	31.5	10.8		9.5	23.7	59.6		9.5	21.9	55.3		9.5	35.4	50.1	
9.5	19 8.4	43.0		9.5	31 3.0	3.2		9.3	23.9	36.0	K	9.1	32.0	17.4		9.0	39.5	8.3	
9.5	8.6	8.2		9.0	10.7	58.5		9.5	47.6	59.1		9.4	40.2	1.3		9.4	3 1.3	32.9	
9.5	12.7	13.1		9.1	24.9	40.0	K	9.2	42 2.0	38.3	K	9.4	57.1	57.8		9.5	10.5	38.8	
5.1	27.2	25.8	G	9.0	27.7	46.9	K	9.5	19.4	22.7		9.5	52 44.9	31.5		9.4	33.7	52.0	
9.5	42.2	52.0		9.4	29.0	23.9		9.1	29.0	58.8	K	9.5	53 3.5	53.8		8.6	35.7	50.8	K
9.5	51.7	43.2		9.3	49.4	59.7		9.4	33.5	53.9		9.5	14.8	12.5		9.5	57.4	45.0	
9.3	20 46.8	42.7		9.4	32 28.1	16.2		9.4	43 14.7	25.2		6.8	28.8	26.6	G	9.5	58.1	50.2	
7.8	50.0	2.5	G	9.3	33.9	20.9		9.5	16.4	19.5		8.5	29.0	6.1		9.0	4 18.1	23.6	K
9.5	50.9	40.7		8.8	33 18.8	28.1		9.5	30.9	40.7		6.7	38.1	34.7	G	9.5	22.7	18.2	
9.4	21 2.1	53.3		6.5	19.2	32.8	K	9.4	32.8	30.9		9.5	47.6	13.2		9.4	42.6	15.2	
9.5	23.2	48.9		9.5	31.7	46.1		9.4	39.8	40.5		9.5	53.7	8.1		9.2	53.2	37.9	
9.4	48.3	58.3		9.5	38.0	7.8		9.0	41.1	33.3	K	9.3	54 1.5	48.2		9.3	59.8	19.8	
8.1	53.8	4.2	K	7.8	42.6	17.7	K	7.9	44 7.0	53.5	K	9.1	7.6	46.2		9.4	5 12.9	33.5	
9.5	22 2.0	26.2		8.7	56.0	39.7	K	9.4	10.7	3.9		9.2	8.4	41.6		9.4	13.4	58.9	
9.5	12.5	1.9		9.5	34 16.0	0.4		9.0	39.3	23.6		9.4	12.8	50.9		9.5	22.6	30.6	
9.5	16.2	3.9		9.2	53.4	46.8		9.2	42.1	51.3		6.2	20.2	1.1	K	9.5	28.9	39.3	
8.8	28.0	15.3	K	8.5	54.5	18.6		9.5	45 4.4	19.5		9.5	30.6	47.9		9.5	32.1	37.1	
9.5	29.0	38.6		9.0	54.9	2.9		9.5	21.2	22.2		8.3	55 5.3	32.9		9.4	33.1	58.5	B
9.2	45.4	52.3		7.7	58.3	59.1	K	8.8	21.7	16.0		8.0	33.0	8.0	K	9.5	47.0	58.6	B
9.5	59.5	5.4		8.8	35 3.9	6.6		8.9	22.5	52.8		7.0	44.8	38.6	K	9.0	49.8	9.1	
8.9	23 21.0	18.7	K	9.3	15.0	26.8		9.4	23.4	55.8		7.0	45.9	39.8	K	9.5	57.4	50.8	
8.1	34.1	54.2	L	9.4	29.2	1.8		9.5	45.3	18.5		9.5	56 2.7	34.0		7.8	6 5.0	38.1	R
9.4	56.8	34.7		8.9	42.5	53.3		9.4	46.1	29.3		9.1	3.8	42.2	K	8.9	13.1	27.9	
8.5	24 20.9	40.9	K	9.4	36 12.1	46.6		9.3	48.3	43.9		9.4	16.9	16.7		9.5	15.3	45.7	
8.3	49.0	50.4	K	9.2	12.8	49.3		7.1	49.5	10.3	K	9.2	17.0	19.6	K	9.0	18.9	21.5	
9.5	49.4	56.1		9.2	22.2	33.1		8.5	46 18.0	45.8		9.4	18.5	32.9		9.5	19.4	45.6	
9.5	54.8	0.3		9.1	31.9	11.4	K	6.7	36.0	8.8	K	9.5	52.6	38.8		9.2	50.0	56.1	
9.4	25 3.5	33.6		8.9	40.5	40.8		9.5	47 13.7	45.7		9.4	57 17.1	6.1		9.3	56.1	18.8	
9.3	4.6	36.1		9.1	46.4	56.8		8.8	18.5	9.4	K	9.5	25.4	57.3		7.2	57.1	42.5	L
9.0	9.1	45.0		9.5	53.2	15.4		8.9	18.6	52.9		9.5	30.8	13.0		8.0	59.1	46.4	L
9.2	25.2	38.6		9.1	37 5.0	53.2		8.5	21.0	16.6	K	9.3	39.0	1.4		7.1	7 6.5	10.9	K
8.2	46.8	24.5		8.8	8.1	51.2		8.5	24.9	15.4	K	9.5	40.0	55.5		9.0	12.8	53.1	
9.5	26 2.4	4.4		9.3	14.8	3.3		8.8	30.5	59.7		9.5	58 1.4	56.0		9.0	31.7	30.2	K
9.4	4.4	35.9		9.4	30.4	48.4		9.4	38.4	47.4		7.3	16.6	44.2	K	8.9	39.8	53.1	
9.4	15.8	30.5		9.5	49.1	33.5		9.0	53.7	45.2	K	9.3	30.6	59.2		9.5	49.0	55.1	
8.7	25.3	39.4	K	8.4	52.2	45.8		9.5	48 10.3	32.8		9.0	31.5	55.4		7.8	49.6	15.2	K
8.5	38.0	9.1	K	9.0	38 1.0	47.5		9.3	18.0	2.5		9.1	34.7	9.7	K	8.3	8 3.7	24.2	K
8.8	38.7	54.3		9.5	26.0	8.5		9.4	21.0	58.3		9.4	36.3	14.1	B	9.5	20.8	38.6	
8.4	43.0	47.6	K	6.5	27.0	9.5	K	8.3	29.9	4.9		9.5	38.9	16.3		9.5	34.1	50.4	
9.5	51.6	20.4		9.2	42.4	26.8		9.5	31.4	53.8		9.5	39.5	10.5		8.4	37.2	59.8	B
9.2	58.7	36.2		9.5	45.2	2.3		9.4	37.9	45.4		9.5	41.2	28.4		9.5	43.9	48.4	
9.4	27 0.5	39.4		9.5	56.3	56.3		9.5	55.7	28.1		7.8	49.8	42.2	K	9.0	52.3	31.2	K
9.5	8.9	54.5		4.3	39 31.9	31.3	K	8.2	49 21.8	10.9	K	9.5	59 2.4	51.4		9.2	9 7.2	35.8	K
8.8	23.1	11.3	K	4.6	33.9	27.6	K	9.5	27.5	19.5		7.5	12.9	54.3	K	9.4	8.1	50.4	
9.4	29.2	46.1		9.3	37.2	51.3		9.5	35.0	48.4		9.5	31.5	0.7		9.5	11.9	21.7	
9.5	40.5	10.4		9.4	40.0	29.6		8.6	42.0	28.6	K	9.5	0 8.6	56.2		9.5	31.5	11.7	
9.4	28 25.1	52.9		9.5	56.0	53.3		9.4	50 4.1	20.5		8.1	16.5	54.5	K	8.0	32.2	24.2	K
9.4	30.5	15.7	B	8.5	56.6	45.4	K	8.9	23.0	29.6		8.8	16.9	11.3		9.5	33.4	50.2	
8.3	42.0	27.2	K	9.3	40 12.7	42.4		8.7	28.4	57.0	B	9.2	32.1	53.7	B	9.3	46.8	38.5	
9.5	29 0.3	14.3		9.5	15.6	53.9		9.5	31.2	11.3		8.6	38.3	22.6	K	9.5	47.2	3.1	
9.3	7.6	2.5	B	8.2	20.0	3.9	K	8.1	33.0	57.2	K	9.5	46.5	31.5		9.5	10 5.9	34.9	
9.4	29.0	11.9		8.5	22.0	21.9	K	9.1	35.3	38.1	B	9.3	47.9	29.3		9.4	10.4	26.5	
9.3	33.9	24.0		9.5	27.8	10.3	B	9.4	35.7	33.0		8.8	55.4	16.9		7.8	27.1	51.6	K
9.5	38.2	2.1		9.5	34.0	55.8		6.7	39.3	59.6	K	9.5	1 7.0	52.7		9.1	27.4	14.4	

3701—3760				3761—3820				3821—3880				3881—3940				3941—4000			
	19ʰ	+39°			19ʰ	+39°			19ʰ	+39°			19ʰ	+39°			19ʰ	+39°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	10 39.2	4.9		9.5	20 46.5	43.4		9.2	29 14.5	19.7		8.2	37 34.0	41.7	K	9.4	47 55.1	16.1	B
9.5	42.3	2.5		9.5	21 11.2	13.2		9.0	53.2	7.8		8.2	36.3	39.1	K	9.5	48 0.7	33.2	
9.3	48.0	42.7	B	9.2	23.3	45.9		8.9	53.3	25.9	B	9.5	45.5	5.8		8.4	7.8	5.4	
9.5	52.0	45.0		9.5	23.6	53.5		9.5	54.3	25.4		9.1	47.7	48.3	G	9.5	12.9	15.9	
8.7	11 29.2	38.9	B	9.4	37.6	16.4		9.0	30 3.4	26.7		6.8	38 6.6	38.8	K	8.5	16.8	9.3	
9.3	42.5	46.8		7.7	39.0	50.8		8.5	11.4	42.4	K	9.5	31.2	3.8	B	9.5	32.6	44.1	
9.4	51.5	35.9		6.7	49.3	40.3	G	9.5	18.8	14.0		9.2	38.5	24.9	B	9.3	37.8	50.5	
9.5	57.9	34.7		9.5	22 3.9	23.7		9.2	32.6	32.5	B	7.7	44.1	23.7	K	9.5	49.2	1.6	
9.5	12 18.0	45.2		9.5	44.9	21.8		9.5	39.2	48.1		9.4	47.5	32.1		9.5	56.0	0.9	
9.5	40.8	36.4		9.4	49.7	17.4		9.3	39.2	45.4		9.0	54.2	0.4		9.5	49 30.7	7.5	
9.4	57.5	26.6		8.7	52.6	30.0		7.9	39.2	42.3	K	8.9	39 0.8	36.3	G	9.5	34.2	1.4	
8.7	13 6.6	16.4	K	9.2	54.9	22.7		9.0	40.4	44.4	K	9.4	20.2	39.2		8.5	51.4	1.4	K
9.5	17.1	18.2		9.3	55.3	11.0		9.4	41.0	36.6		9.3	28.7	41.7		9.4	57.1	9.5	
9.5	19.2	58.0		9.1	57.6	22.2		9.5	41.8	8.4		9.1	42.8	28.5		9.5	58.5	10.6	
9.3	46.2	31.5		9.4	58.4	37.1		9.4	44.8	32.0		8.7	51.0	43.7	G	9.4	50 4.2	0.9	
9.4	50.1	50.6		9.5	23 10.9	25.8		9.0	46.9	48.6		9.5	55.1	1.6		9.5	11.1	4.8	
9.4	55.6	22.0		7.0	42.8	38.5	K	8.2	31 8.2	0.9	K	8.6	40 8.9	35.1	K	9.3	15.2	0.4	
9.1	55.6	4.3		9.4	55.5	30.8		9.5	10.4	18.6		8.9	20.6	56.0		9.3	24.9	11.6	B
7.6	14 1.2	0.4	K	9.5	56.2	26.0		9.5	19.3	9.3		8.7	22.0	3.1	B	6.8	37.3	48.1	L
9.5	5.9	18.8		9.3	59.4	20.8		9.5	33.4	41.1		9.0	40.3	38.5	K	8.9	45.5	58.2	
8.8	9.4	18.7		8.4	24 6.0	38.3	K	8.9	38.8	23.9		8.5	41.9	9.4		9.5	59.6	22.1	
8.7	48.1	51.6	R	9.5	26.6	45.0		9.4	32 3.6	29.1		8.7	50.1	44.1		9.3	51 34.0	51.7	
9.4	51.0	13.9		8.9	50.7	18.2	B	9.5	8.5	14.6		8.7	53.4	18.8		9.4	46.2	15.7	
9.5	15 8.3	2.4		8.5	51.0	28.1		8.0	11.8	53.5	K	9.3	54.0	26.5		9.2	49.5	47.8	B
8.7	10.3	38.6	K	9.4	25 1.6	51.9	B	9.2	13.6	21.9		7.3	55.0	32.1	K	8.6	52 0.5	32.1	K
9.3	15.7	9.6		9.5	6.7	18.5		9.5	31.7	31.6		9.4	41 15.4	34.0		9.2	8.2	59.2	
9.4	18.6	5.2		9.2	6.9	54.1	K	9.5	38.7	22.9		8.8	29.2	2.0	K	9.5	10.4	7.8	
9.2	19.6	4.3		9.2	8.4	5.3		9.3	39.0	9.6		7.7	33.8	9.4	K	5.8	11.0	58.8	G
9.4	22.8	23.9		8.5	27.0	50.7	K	9.5	44.5	14.2		9.2	41.3	48.1		8.7	13.3	16.1	K
9.5	33.0	19.8		9.3	27.0	19.3		9.2	53.3	38.5		9.3	55.3	20.1		9.3	20.8	8.0	
6.5	33.9	39.4	K	9.4	32.0	28.0		9.2	33 3.2	37.5		8.7	56.3	32.7	B	9.3	24.7	15.7	K
8.8	40.6	31.0		9.5	51.7	23.5		9.3	14.7	20.3		9.4	42 32.5	35.2		9.5	30.2	56.1	
9.1	16 12.2	0.6	K	8.8	56.4	43.2		9.5	33.0	16.1		9.4	33.8	31.6	B	9.5	36.6	56.4	B
9.5	12.6	55.3		9.2	26 8.5	33.9		9.5	36.2	43.0		9.5	38.8	33.1		9.5	40.0	57.4	
9.5	23.2	16.8		9.2	38.0	13.7		9.5	36.6	18.9		9.4	46.9	39.1		9.4	42.6	13.3	
9.5	42.3	49.1		9.3	40.6	21.5		9.5	37.7	59.9		9.5	49.9	13.9		9.5	45.9	36.5	B
9.3	55.2	33.6		9.3	43.3	18.8		9.5	49.4	56.4		9.4	53.5	36.7		9.5	46.1	27.5	
9.3	57.0	32.1		9.1	55.6	53.3		9.2	54.9	49.8		9.5	43 26.2	0.9		9.5	48.5	5.8	
8.9	57.4	57.1		9.1	27 1.2	4.5		9.5	34 19.3	30.5	B	9.0	26.7	30.3	K	9.3	50.0	9.7	
7.5	17 6.3	12.7	K	9.3	12.8	5.4		9.4	37.4	9.0		9.5	30.7	50.0		9.5	52.3	36.3	B
9.5	16.9	46.6		9.5	16.2	44.8		9.5	38.0	19.5		8.7	34.2	4.3		9.5	57.9	44.3	
9.2	17.1	32.7		9.4	20.2	10.0		9.2	51.6	35.4		8.4	35.7	54.0	B	9.5	59.4	10.1	
9.0	27.5	37.9		8.4	23.2	0.2	K	9.3	35 1.8	34.1		7.2	42.4	33.5	K	8.7	53 3.4	0.9	K
9.5	35.2	47.4		9.5	32.1	41.4		9.4	4.8	36.3		9.3	45.5	39.9		8.9	16.5	49.1	
9.5	41.2	47.3		9.3	40.9	11.5		8.7	6.7	0.9	K	8.8	44 35.8	16.9		9.5	36.1	21.4	
9.3	48.7	23.0	K	9.4	43.2	17.1		9.4	8.2	24.7		8.9	49.7	21.6		9.4	59.5	18.7	
9.5	52.8	38.5		9.5	50.9	28.3		9.5	11.3	31.0		9.5	51.3	52.3		9.4	54 15.6	55.8	
8.5	18 5.2	38.1	K	9.5	53.6	58.9		8.9	15.5	20.7		9.4	45 2.8	30.8		9.4	20.3	28.3	B
9.5	20.5	43.5		7.8	59.5	21.0	K	8.9	17.0	19.0		9.4	8.1	32.8		9.5	21.2	8.1	
7.5	50.8	32.4	K	9.2	28 0.7	39.7		9.2	44.2	57.3		9.0	17.2	23.1		8.5	46.3	8.1	K
6.3	50.9	18.3	K	9.5	4.5	51.1		8.8	47.3	58.3	B	9.3	46 1.4	41.3		9.5	49.8	55.1	
9.0	19 4.2	41.0	K	9.5	5.5	26.6		9.5	56.0	33.2		8.3	1.5	9.8	K	9.5	50.0	45.6	
9.2	16.2	0.4	K	9.5	13.7	3.1		9.0	36 4.4	30.5	B	8.6	30.9	20.5		9.5	55 5.0	0.0	B
9.4	16.7	3.4		9.5	20.2	6.0		9.5	12.5	36.8		8.1	32.0	10.3	K	9.3	11.6	42.7	
9.1	28.8	12.8		9.5	22.8	19.5		9.4	21.7	50.3		8.8	40.7	40.9		9.0	24.1	22.2	
9.5	32.1	46.2		9.0	32.6	53.3	K	6.9	41.2	41.0	K	9.0	47.2	16.9		9.4	27.4	27.6	
9.1	51.8	42.0	K	9.4	40.0	8.2		9.5	53.2	35.9		9.5	47 6.4	55.8		9.3	32.7	46.8	
9.1	20 5.0	21.5		7.3	46.0	24.8	K	6.2	37 0.3	54.9	G	9.3	10.1	4.9		9.0	39.6	2.3	K
9.3	18.4	11.0		9.5	58.1	7.1		8.9	14.6	57.3	G	9.5	14.8	9.7		9.2	42.5	25.4	
9.2	34.3	29.8	B	9.4	29 7.7	48.6		9.5	32.6	12.5		9.5	20.2	2.6		9.4	46.7	14.6	

4001—4060				4061—4120				4121—4180				4181—4240				4241—4300			
	19ᵐ—20ᵐ	+39°			20ᵐ	+39°			20ᵐ	+39°			20ᵐ	+39°			20ᵐ	+39°	
m		′		m		′		m		′		m		′		m		′	
9.3	55′ 47.8	26.7		9.0	4′ 28.2	43.0		9.2	12′ 52.2	29.5		8.6	20′ 26.9	31.9		9.4	28′ 59.0	20.3	
9.5	51.6	32.4		9.4	50.6	56.3		9.1	54.0	38.7		9.2	29.1	5.6		9.4	29 20.0	58.7	
8.5	59.9	8.2	K	9.5	5 24.6	59.7		9.5	55.5	48.5		9.2	30.0	35.3		9.5	25.6	18.3	
9.3	56′ 1.3	15.9		9.4	26.9	18.6		8.7	58.2	7.2		8.9	32.3	9.3		8.5	33.0	23.7	
8.9	18.4	56.8		9.5	33.1	34.5		8.5	13 2.0	40.2		9.4	38.1	40.0		9.5	39.8	58.6	
9.5	22.4	8.7		9.5	33.2	24.8		9.0	3.2	25.8		7.3	51.2	55.5	G	8.8	55.7	24.1	K
7.8	24.2	53.9	K	9.0	34.7	52.0		9.0	9.6	22.9		9.3	55 7	42.7		9.5	30 0.5	7.7	
9.1	27.9	24.6		8.5	47.4	50.8		8.6	13.0	56.3	K	9.2	56.1	3.4		9.5	14.1	47.8	
9.3	42.3	44.8		9.3	49.6	4.1		8.6	19.8	9.2		9.3	21 5.5	11.4		9.2	16.2	31.2	
9.2	50.2	6.0	K	8.6	58.0	18.0		8.0	28.7	46.5	R	9.5	8.3	45.7		9.5	40.1	31.2	
8.7	52.9	53.2	K	9.4	6 2.9	52.6		9.5	36.8	0.6		9.4	23.8	59.7		9.4	31 11.2	40.1	
9.4	57 13.5	30.5		9.2	6.5	51.4		9.3	39.9	17.8	K	7.2	26.1	1.4	K	7.9	18.9	58.6	K
9.5	16.8	55.0		9.4	37.9	54.4		9.4	42.6	30.8		7.7	30.4	52.3	K	8.5	51.9	17.7	
9.5	24.8	17.0		9.5	38.3	10.5		9.5	58.1	10.6		9.2	52.7	43.2		8.3	32 4.4	18.0	
8.9	34.1	4.5	G	6.8	39.9	53.9	G	9.3	14 17.1	59.9		8.5	53.4	34.5	K	9.5	14.1	18.1	
9.4	50.7	41.3		9.5	45.7	34.5		9.5	23.9	27.3		7.7	22 7.0	15.4	B	9.1	17.1	31.0	
7.5	56.3	46.0	G	9.4	48.3	31.0		9.0	40.7	5.6	K	9.1	25.1	23.0	K	9.0	19.8	6.5	K
9.5	58 10.7	14.4		9.5	56.3	29.8		8.7	44.7	10,3	K	9.5	25.6	3.2		9.5	34.5	35.2	
9.5	13.7	55.2		8.6	7 13.3	30.5		9.5	49.7	15.4		9.1	28.5	0.8		9.5	50.1	51.8	
8.0	20.2	52.2	G	8.3	13.5	17.9		8.8	15 10.3	10.3	K	9.2	29.5	20.4	K	8.0	51.0	2.2	K
9.5	31.5	30.2		9.1	24.4	51.9		9.5	19.2	24.4		9.5	47.4	28.7		9.0	51.3	10.9	K
9.4	56.6	32.4		7.5	25.3	49.9	G	9.5	20.5	40.2		9.5	58.9	55.2		9.5	33 5.5	9.2	
9.4	59 17.8	47.5		9.5	38.8	57.9		9.5	22.2	6.0		9.4	23 2.4	36.5		9.3	9.7	39.5	
9.5	28.5	52.5		9.2	46.6	21.2		9.1	34.3	9.2	K	9.5	4.0	35.5		9.4	10.4	54.0	
9.5	33.5	10.6		9.0	48.9	2.6		8.9	39.9	0.7	K	9.5	23.2	8.1		9.5	11.6	35.0	
9.5	42.4	28.9		9.0	49.9	27.5		9.2	42.7	44.9		8.8	28.3	27.9		9.0	17.4	55.0	
8.8	0 8.6	1.9	K	9.5	50.0	41.2		9.5	52.2	25.2		9.4	33.4	52.4		9.3	40.3	46.7	
8.7	10.4	47.1		9.5	8 6.9	31.7		8.4	16 1.2	8.6	K	9.2	34.3	29.9		9.5	41.6	6.7	
9.5	25.5	10.6		9.4	19.0	15.2		9.3	10.7	25.2		8.9	47.0	36.9		9.5	51.0	49.7	
9.5	26.5	14.0		9.5	27.3	26.6		9.5	11.6	20.6		8.0	24 8.5	37.0	G	9.4	34 16.7	7.8	
9.0	35.7	34.4		9.3	33.1	5.6		9.0	19.1	21.8	R	9.5	19.7	14.5		9.5	43.2	57.4	
9.5	45.4	46.7		9.5	35.0	27.8		8.8	24.8	59.1		8.9	28.3	10.1	K	9.0	53.0	27.3	
8.2	54.0	38.8	G	9.5	9 0.5	29.6		9.3	31.0	54.9		8.4	39.9	52.9		8.5	59.1	32.2	
9.5	1 21.3	46.3		9.2	5.4	32.9		8.9	32.2	43.1		8.8	41.2	5.6	K	9.3	35 9.4	6.5	
8.9	31.5	49.0		9.5	6.7	43.5		9.5	38.5	50.7		9.5	52.5	37.7		9.3	9.9	7.7	
9.0	38.6	0.8		8.1	17.4	53.1	K	8.8	48.1	22.5		9.5	25 6.6	32.9		9.2	24.3	39.8	
9.5	45.6	13.5		8.6	24.6	56.8	K	8.3	55.7	59.3		8.6	26.4	33.4	K	8.3	39.5	47.5	
9.5	48.0	39.2		9.5	46.3	30.8		9.3	57.9	15.4		9.5	47.1	36.1		9.5	36 7.4	3.8	
9.2	2 2.8	36.2		9.4	52.5	18.6		2.8	17 2.2	47.5	S	7.2	47.9	56.3	K	9.4	10.7	18.9	
9.5	7.8	16.7		9.3	54.1	3.4		9.3	23.6	30.1		8.9	54.8	29.6	K	7.8	29.8	0.2	K
9.5	20.6	51.2		9.5	10 1.8	46.9		9.5	43.6	59.4		7.4	26 8.5	27.0	K	9.5	30.4	25.4	
9.0	27.4	10.0		8.6	4.0	38.8		9.3	18 10.1	41.3		9.5	8.7	34.6		9.5	30.8	22.7	
9.2	30.1	40.9		8.5	4.6	15.1		9.0	23.3	10.8		9.2	18.6	23.2	K	9.0	40.4	43.7	
9.3	34.8	45.1		9.1	7.3	10.9		9.5	37.8	36.6		9.1	49.6	33.3		9.5	45.4	44.9	
9.5	38.8	17.7		9.3	17.5	17.6		9.4	45.5	39.4		8.9	55.9	14.4		9.2	52.0	28.9	
9.5	50.0	39.4		9.4	24.3	10.5		8.1	46.6	4.5	B	9.5	27 25.4	30.9		9.5	56.8	1.2	
9.4	52.5	30.5		9.2	45.9	31.2		8.6	50.9	52.4		8.9	26.0	35.2		9.5	37 2.7	57.3	
9.5	53.6	1.0		9.3	52.3	55.8		9.5	19 7.0	17.7		9.5	27.1	25.0		9.5	15.7	15.6	
8.3	58.0	19.7	K	9.5	11 13.5	8.7		9.3	11.1	21.3		8.9	27.8	38.6		9.5	29.3	2.5	
9.5	59.5	30.5		9.5	15.5	29.4		8.8	18.0	12.1		8.9	40.0	59.5		9.1	53.7	54.4	
8.7	3 9.6	56.9	G	9.3	25.1	42.8		9.2	30.0	37.2		9.2	47.1	3.1		9.4	59.8	59.0	
8.7	13.5	59.9		9.2	26.3	10.5		7.5	35.1	40.8	G	7.9	48.8	22.5	B	9.5	38 1.6	11.4	
9.2	19.0	2.4		7.5	34.5	14.7	K	9.4	37.2	7.7		9.5	48.6	4.6		8.0	15.6	52.4	L
7.0	39.1	22.5	K	5.4	45.4	54.9	G	8.5	43.1	22.3		9.0	50.7	48.0		9.3	20.0	47.8	
9.4	47.8	58.6		6.9	12 11.7	8.3	K	9.2	45.5	37.7		8.9	55.5	57.6		8.4	24.7	17.8	K
8.4	51.3	46.2	K	9.4	13.0	27.5		8.0	20 0.4	32.8		9.5	55.8	58.2		8.3	30.2	57.3	
9.5	4 8.9	0.5		9.3	37.6	34.7		9.1	8.9	44.7		9.5	28 18.0	19.2		9.4	50.6	11.5	
9.4	11.4	13.3		8.7	37.8	28.0		7.5	12.9	19.3	B	9.0	28.2	26.8	R	8.2	59.6	13.5	K
8.6	15.3	9.3	K	8.9	45.1	2.2		9.4	15.8	55.6		8.7	39.4	36.3		9.4	39 3.7	57.2	
9.3	25.5	19.4		9.5	46.1	42.5		7.6	16.5	37.4	G	9.2	42.1	9.6		9.3	23.7	54.2	

4301—4360					4361—4420					4421—4480					4481—4540					4541—4600				
	20ᵘ		+39°			20ᵘ		+39°			20ᵘ—21ᵘ		+39°			21ᵘ		+39°			21ᵘ		+39°	
m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′	m		′	″	′	
9.4		39	26.6	14.2	9.5		49	0.4	32.1	8.0		57	45.3	40.3	K	9.5		7	15.7	57.4	9.5		17	50.1	51.6	
8.8			35.6	53.0	9.3			10.5	11.2	9.4		58	40.6	50.9		8.7			29.4	5.9	6.8			53.2	24.4	L
9.0			44.7	54.5	9.5			24.7	59.9	9.5			42.9	23.7		8.6			44.3	51.6	K	9.5		18	5.7	57.6	
9.5			45.4	4.7	9.1			27.5	8.0	9.5			58.6	11.6		9.5			48.4	29.0	9.5			27.3	24.9	
9.5			55.1	38.3	9.2			28.5	48.3	9.5		59	9.9	24.9		9.5		8	12.3	52.1	9.5			41.6	26.1	
9.1		40	7.6	13.1	K	9.5			39.3	1.5	9.5			24.1	34.0	9.1			19.1	33.8	K	8.7			47.5	9.8	K
9.3			12.4	42.5	9.4			41.4	16.0	8.6			29.4	46.0	K	8.9			30.7	22.6	9.5		19	21.0	11.8	
8.9			13.1	53.1	7.2			55.4	45.0	L	8.6			34.6	50.7	K	9.4			50.9	46.8	9.5			25.9	7.5	
9.5			33.9	24.0	9.4			59.0	26.2	9.3			53.6	57.4		9.4			56.2	8.8	9.5			29.3	33.0	
9.5			38.0	27.2	9.0		50	7.1	33.6	9.5			59.9	23.0		8.8		9	14.1	4.6	K	9.5			32.1	43.8	
9.5			52.3	38.6	8.5			7.4	3.9	K	9.5		0	3.8	31.4	9.4			22.7	30.2	9.5			45.0	22.5	B
9.1		41	7.5	48.0	9.4			8.5	48.4	9.5			15.4	37.7		9.5			31.5	13.9	9.1			56.5	9.7	
9.5			8.9	23.8	9.5			36.8	22.4	9.5			16.8	5.7		9.1			41.1	39.8	9.5		20	11.4	21.2	
8.5			12.6	11.5	K	9.5		51	6.4	45.6	9.1			23.7	42.5	9.0			44.7	26.5	9.5			18.1	16.2	
9.3			37.4	44.8	9.5			11.3	40.4	9.3			31.9	26.0		8.8			59.3	7.3	9.5			25.5	29.5	
9.1			42.3	40.6	9.4			25.6	56.0	9.5			59.5	1.0		9.5		10	0.7	45.8	9.3			28.9	42.8	
9.2			48.1	33.9	9.5			26.6	12.2	9.5		1	12.5	0.3		9.4			22.4	52.5	9.1			32.9	7.5	
9.1		42	2.6	14.1	9.1			36.9	0.8	8.7			16.0	28.5		9.2			32.8	57.0	8.5		21	9.1	57.1	
9.5			9.4	9.7	9.0			52.2	37.1	9.5			16.7	46.0		9.2			46.1	51.5	8.0			9.3	1.8	L
9.5			9.5	44.2	9.1			55.6	53.4	8.3			18.8	44.0		9.5			47.7	31.7	9.3			22.0	15.7	
9.1			25.5	49.8	8.8		52	3.0	28.7	9.0			34.2	52.2		9.5			50.4	23.1	9.5			26.8	18.9	
9.0			37.5	48.1	7.0			4.8	6.3	G	9.5			43.7	23.4	9.3			54.0	35.4	9.1			34.5	45.3	
8.6			39.8	22.4	8.9			11.6	11.8	9.5		2	0.7	4.1		9.2			57.5	21.6	9.4			51.6	39.6	
9.5			42.0	15.1	8.7			11.8	9.3	B	9.4			18.3	53.3	9.1		11	7.8	42.6	9.0		22	1.8	26.8	
9.4			51.4	46.3	8.5			15.1	33.4	L	9.4			35.2	51.7	R	9.4			18.0	33.0	9.3			4.4	35.0	
9.3			58.8	48.5	7.7			26.4	43.0	G	9.5			35.4	25.3	9.0			21.0	43.3	9.5			52.1	39.9	
9.1		43	0.1	34.5	9.5			43.2	26.9	8.1			45.3	5.0	K	8.8			25.3	24.8	7.9		23	12.0	45.1	K
9.5			24.0	54.9	9.4			45.7	18.8	9.4			54.2	28.3	B	9.4			29.3	56.0	8.0			14.9	50.2	B
9.4			27.4	7.3	8.2		53	19.0	56.7	B	9.5			56.6	41.1	9.5			53.6	41.9	9.5			17.2	48.7	
9.5			33.7	55.9	9.5			19.7	23.5	9.5			57.4	36.9		7.5			56.1	8.5	S	7.5			20.3	40.3	K
7.3			34.6	15.1	S	8.9			23.1	18.8	9.5		3	16.5	8.8	9.4			59.6	57.7	9.5			27.3	38.3	
9.1			46.0	30.2	9.5			39.6	12.2	9.4			21.4	36.7		9.5		12	3.3	40.5	9.5			28.7	18.7	
9.3			46.7	37.1	9.4			41.6	8.5	9.2			27.6	39.9		9.5			9.2	31.8	9.4			30.6	50.2	B
9.1		44	25.3	39.6	8.5			42.0	29.7	L	9.5			38.8	43.6	9.2			14.3	58.0	9.5			49.4	27.7	
9.4			26.8	21.3	9.5			56.3	1.0	9.4			47.0	48.3		8.9			29.7	50.0	K	9.5		24	3.9	25.9	
8.2			32.0	29.9	K	9.5			56.4	36.2	9.4			49.4	15.1	9.5			33.6	41.6	9.0			40.7	34.1	
9.2			32.9	25.7	9.5		54	3.6	57.5	9.1			52.2	45.6		9.1			41.7	37.9	K	8.9			47.1	12.1	
9.5			37.8	20.0	9.5			10.2	19.7	9.3			53.7	15.7		9.4			52.0	15.9	9.5		25	9.0	19.5	
9.5			43.2	58.7	9.3			16.3	39.3	9.5			58.2	35.8		6.8		13	19.1	8.3	K	7.1			36.6	25.7	K
9.5			50.0	3.2	6.8			22.3	41.0	K	9.5			58.5	55.5	9.5			25.9	54.7	9.3			50.1	9.3	
9.5		45	1.6	51.4	9.1			33.2	38.4	8.4			58.8	34.5		8.2			49.2	51.8	K	9.0		26	15.2	10.6	
9.5			3.5	48.2	9.5			42.0	52.9	9.5		4	14.9	26.5		8.3			53.1	39.7	K	9.4			35.9	23.3	
9.5			30.2	40.8	8.0			59.4	46.1	K	8.9			16.4	36.8	9.5			58.1	12.3		9.4			40.0	43.3	
9.1			30.8	22.0	9.5		55	14.4	5.8	9.5			18.7	42.5		9.5		14	16.2	12.8		9.2			40.3	28.8	
9.5			38.4	4.2	9.0			15.6	53.7	9.5			21.0	59.0		9.4			47.0	19.7		9.4			45.2	1.1	
8.0			56.4	6.4	K	9.5			20.6	59.3	8.8			25.2	12.9	9.4		15	4.6	10.3		9.0			51.9	9.8	K
8.7			57.9	26.2	9.0			22.6	14.9	K	9.5			27.0	28.7	8.8			4.8	38.5		9.1		27	4.0	58.0	
9.5			59.0	9.9	8.0			26.9	25.0	K	9.1			33.3	53.6	K	8.3			16.3	25.2		8.5			4.9	35.2	
9.4		46	19.3	38.6	9.5			51.1	34.6	8.6			53.7	56.4	K	6.5			21.8	44.4	L	7.7			8.8	46.6	L
8.7			39.9	25.3	9.1		56	6.4	43.5	K	9.5			54.5	51.9	9.5			26.8	56.1	B	8.8			11.1	49.8	
9.5			46.5	47.5	9.5			8.6	38.6	9.2			54.9	45.3		9.5			30.6	54.1		9.5			17.7	13.2	
9.5		47	24.1	33.7	9.3			16.5	48.5	9.5		5	24.4	36.4		9.5			32.1	25.4		9.5			29.4	53.0	
9.5			39.6	51.0	7.7			24.4	44.3	K	9.4			24.4	57.7	9.5			34.1	12.0		9.0			34.9	46.6	
8.5			47.5	47.0	K	9.1			53.1	34.4	8.5			37.6	50.0	K	9.5			56.3	32.7		9.0			49.6	18.2	
9.5			59.7	48.3	9.5			57.2	54.9	8.3		6	0.9	26.8		9.4		16	25.9	23.3		9.5		28	4.8	23.4	
9.2		48	7.1	32.9	9.5		57	20.1	11.3	9.5			8.3	53.7		9.4			32.2	16.6	K	8.6			22.9	11.3	
9.5			13.3	2.6	9.5			21.5	0.1	9.1			27.2	51.0		9.5			49.1	43.5		8.8			24.2	47.9	K
9.5			25.6	15.1	8.3			34.9	25.2	K	9.4			32.1	28.5	9.3			53.4	23.0	K	8.6			25.6	35.8	K
9.5			30.6	52.7	9.5			35.0	29.4	7.8			36.6	33.3		9.5		17	20.8	58.2		9.4			49.5	45.1	
9.4			32.5	49.0	8.6			37.5	49.4	9.4		7	8.5	6.5		9.5			37.3	17.0		9.5		29	39.5	45.3	

4601—4660				4661—4720				4721—4780				4781—4840				4841—4900			
	21ᵐ	+39°			21ᵐ	+39°			21ᵐ—22ᵐ	+39°			22ᵐ	+39°			22ᵐ	+39°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.8	29	43.4	33.0	K	8.8	39	36.9	45.5	K	9.4	51	39.2	4.9	B	9.3	6	21.9	59.1		6.0	21	6.2	4.8	K
8.1		50.3	28.8	K	9.5		40.1	20.9		9.5		54.1	4.1		8.6		22.9	51.0		8.8		6.7	44.0	K
8.8		57.0	13.9	K	8.8		54.8	49.0	K	9.4		57.0	12.2		9.5		26.7	11.8		9.4		26.7	39.2	
9.0	30	2.8	54.2		9.2	40	0.0	4.5		9.1	52	2.5	51.2		9.5		45.3	39.6		9.3		27.3	13.2	B
9.4		3.0	10.9		9.4		18.3	32.9		9.5		17.6	43.7		9.5		46.0	5.3		9.2		29.2	47.2	
8.3		8.4	32.9	K	9.4		19.0	28.6		9.1		30.2	58.6		9.5		49.1	32.0		9.2		44.7	26.1	K
9.3		14.1	22.8	B	8.1		29.8	11.0	K	9.0		49.1	29.8		9.0	7	46.2	45.8	K	9.5		49.2	42.7	
9.5		19.5	13.7		9.2		37.1	43.4		9.5	53	4.7	39.6		9.5		56.8	40.0		9.1		57.3	50.7	
9.3		29.3	56.3		9.5		45.9	24.0		9.5		10.2	18.7		9.3	8	2.4	15.9		9.5	22	4.7	41.3	
9.5		29.5	32.8	B	9.4		49.7	4.1	B	9.5		40.1	51.7		8.0		5.1	46.8	K	8.5		7.2	8.6	K
8.9		58.5	17.6		9.5	41	3.4	14.4		9.5		49.1	4.3		9.5		57.2	27.0		8.8		39.7	33.6	K
5.0	31	8.7	45.8	K	9.1		5.7	5.5	K	9.5		49.4	52.4		8.0	9	2.1	2.7	L	9.4	23	9.1	10.3	
9.5		15.4	1.7		9.5		44.3	41.0		9.4		52.7	24.9		9.5		41.8	15.5		9.4		12.4	36.0	
9.5		29.0	57.5		9.4	42	10.1	49.6		9.5	55	11.4	20.1		9.3		58.5	45.8		9.5		19.2	28.0	
9.1		39.4	25.3		9.0		10.2	52.6		9.4		17.2	26.3		8.8	11	9.2	54.2		8.8	24	6.0	1.6	
9.5		41.3	28.5		9.5		19.0	2.2		9.4		51.2	35.4		8.7		51.2	3.5		8.0		7.7	27.5	B
9.4		47.2	32.2		8.3		57.6	56.6	K	9.5	56	48.1	31.9		8.0		53.4	13.6	K	8.8		20.7	14.5	
9.2	32	5.2	20.4		9.5	43	9.5	11.7		9.5	57	4.7	53.1		9.5	12	22.3	46.1		8.8		24.1	21.5	
9.0		13.1	12.5		9.3		14.9	9.7	B	9.5		44.2	33.0		9.5		37.0	16.9		9.5		24.2	39.6	
9.5		13.7	7.4	B	9.3		29.4	14.1		8.9		48.7	1.3	K	9.5		59.8	36.7		7.5		32.0	59.7	K
9.5		17.2	48.4	B	9.5		39.8	41.6		9.0		51.5	3.3		9.5	13	8.6	48.9		9.5		43.3	12.1	
9.4		42.0	57.7		9.5		51.9	20.9		9.5		56.1	13.4		9.5		10.7	21.1		9.1		49.5	24.2	K
9.3	33	21.9	42.9		9.5	44	30.0	4.1		9.5	58	16.6	47.2		9.5		18.2	17.6		9.3		57.7	3.1	
9.4		26.2	8.8		9.5		42.3	48.6		9.5		26.7	20.1		9.5		19.6	52.4	B	9.2	25	14.3	32.5	B
8.7		27.4	40.9	K	9.5		54.3	16.2		9.5		42.8	33.0		9.1		24.8	59.4	B	9.0		22.1	32.5	K
9.5		31.3	21.2		9.5	45	1.7	21.8		9.4		50.8	27.4	B	9.5		44.7	46.5		9.5		26.4	50.7	
8.0		36.3	59.1	K	9.3		7.3	11.0		9.5		53.9	26.4		9.4		46.6	4.6	B	9.1		34.6	53.8	
9.1		38.2	34.2		9.4		8.4	8.2		9.4	59	21.6	35.4	B	9.5	14	0.2	29.1		9.2		41.5	38.6	K
9.4		40.7	50.3		9.2		21.8	2.0	B	9.5		24.7	25.3		8.9		10.4	38.5		8.5		43.4	3.4	K
9.0		42.8	17.2	K	9.5		22.2	42.0		9.5		33.6	31.6		9.5		18.3	17.4		8.2		59.3	52.5	G
9.3	34	0.6	1.6		8.5		49.6	24.6		9.0	0	0.7	18.4		9.4		23.7	28.4	B	6.2	26	2.0	2.1	B
9.5		2.1	16.2		9.5		49.9	40.1		9.5		3.2	54.9		9.3	15	19.1	51.3		9.5		6.3	31.7	
9.3		3.5	45.1		9.5	46	6.2	30.9		9.3		5.9	51.0		8.2		29.0	15.9	K	9.4		8.1	33.7	B
9.5		23.8	30.5		8.6		13.9	7.9	K	9.1		35.7	12.2		6.5		37.1	55.8	L	9.0		12.9	34.8	K
9.5		28.4	40.8		9.5		18.8	45.1		9.0		48.4	57.7		9.4	16	2.7	17.0		9.5		34.4	0.2	B
9.5		47.2	46.0		9.1		24.4	43.3	B	9.5	1	2.2	54.1		9.5		12.1	43.6		9.3		40.4	6.2	
9.5	35	13.1	28.0		9.3		29.7	13.5	B	9.5		16.5	4.7		9.2		21.5	4.8		9.4		40.9	7.1	
9.5		15.9	53.3		9.0		32.1	7.9	K	9.3		22.7	19.1		9.3		37.0	28.7		9.1		50.7	35.0	K
8.7		18.0	17.7		9.0	47	13.8	52.1		9.4		23.2	29.1		9.0		45.5	37.1		9.3	27	16.7	0.4	
9.5		42.6	10.2		9.2		40.2	41.3		8.5		37.3	24.6	K	9.5	17	7.0	58.2		9.5		24.9	11.1	
9.4		48.4	53.5	B	8.9		48.2	44.0	K	9.1	2	14.5	49.7		9.5		12.9	34.7		9.5		31.4	46.8	
7.8		58.3	52.2	K	9.4		58.1	23.6		9.5		25.4	0.7		8.7		15.4	50.7		9.4		45.5	31.5	
9.5	36	0.8	30.5		8.9	48	10.2	11.1	K	8.0		28.1	24.6	K	9.4		18.2	56.2		8.7	28	2.0	53.8	K
9.1		21.3	36.7		9.0		25.7	4.1		9.1		30.4	45.4		9.5		23.3	14.2		9.5		17.2	45.2	
9.2		21.5	4.1		9.5		36.9	0.9		9.5		38.7	53.5		8.9		39.7	25.0		9.4		20.9	30.8	
9.4		29.9	58.3		8.2		43.7	14.5	K	9.2		58.3	21.5	B	9.4		44.8	59.0		8.3		26.3	58.1	K
9.3	37	5.4	20.6		9.5		57.0	4.7		9.0	3	7.7	57.3	K	9.5	18	49.6	50.7		9.5		42.2	10.0	
9.5		15.5	55.3		9.0	49	5.2	19.7	K	9.5		20.0	45.5	B	9.5		52.7	34.7		9.3	29	6.7	8.3	
9.5		16.9	47.5		9.3		20.1	39.9		8.5		48.2	59.4	B	8.5	19	2.8	25.3		9.1		7.4	7.1	
8.6		19.9	48.7	K	9.5		38.7	30.5		9.3		51.3	4.9	B	9.5		41.3	8.3		9.0		21.5	20.8	
9.5		33.0	56.1		9.4	50	1.3	39.9		9.3		58.2	31.9		9.5		52.2	33.3		9.5		27.0	58.3	
9.5		59.3	26.1		9.5		10.6	3.1		9.0	4	2.3	21.5	K	9.1		56.4	54.3		8.0		50.7	20.8	K
9.4	38	1.6	8.1		9.5		11.0	24.4		8.7		5.2	11.1		9.5	20	15.6	44.8		9.2		56.9	27.5	
9.5		20.4	4.1		9.5		15.0	23.3		8.0		29.9	32.6	K	9.4		16.9	15.6		8.5		57.1	38.5	K
9.5		57.8	54.7	B	9.5		28.4	19.0		7.8	5	6.3	28.0		9.0		18.7	56.2		9.5	30	35.0	34.7	
9.5	39	6.4	2.6		9.1		41.7	59.3	K	9.3		29.5	56.1		9.5		27.8	58.1		9.4		45.1	8.0	K
9.1		8.9	23.4		9.4		44.3	29.8		9.3		35.2	34.2	B	8.2		28.0	48.3	K	9.1		59.9	25.4	K
8.7		16.4	48.1	K	9.5		47.2	34.0		8.9		37.5	5.9	K	9.5		55.1	35.9		8.8	31	10.6	24.3	K
9.1		24.3	8.5		9.3	51	6.8	43.3		9.3		57.7	7.7		9.2		59.9	56.2		9.5		13.4	44.7	
9.1		32.8	7.1		8.8		14.1	13.2		9.0	6	16.2	15.2	K	9.5	21	5.9	36.8	B	9.5		42.0	55.3	

4901—4960				4961—5020				5021—5080				5081—5140				5141—5200			
	22h	+39°			22h—23h	+39°			23h	+39°			23h	+39°			23h	+39°	
m				m				m				m				m			
9.5	32′ 7.9	36.4		9.3	47′ 20.1	13.8		8.6	2′ 45.9	25.1	K	9.2	18′ 50.1	42.2	K	9.4	34′ 9.0	35.5	
9.5	21.7	7.6		9.3	23.7	48.2	K	9.5	53.1	3.0		8.6	50.6	54.8		9.5	15.7	32.1	
9.4	30.8	38.8		9.5	25.4	15.9		9.5	3 50.5	48.4		9.4	52.4	3.1		7.3	20.1	45.2	K
9.4	40.1	35.3	B	5.8	27.9	36.1	G	9.5	54.4	9.1		9.5	19 25.6	5.6		8.8	21.7	24.7	
9.5	51.0	32.3		8.7	58.5	13.0		9.4	56.6	41.4		7.7	29.9	35.1	K	8.5	40.5	30.6	
7.7	54.6	51.1	K	9.5	48 20.2	22.5		9.5	4 1.1	38.7		9.1	36.0	10.9	K	9.5	50.6	34.8	
9.3	33 0.2	5.0		9.2	33.3	45.1	B	9.4	1.2	26.5		9.4	20 9.5	2.7		9.5	35 8.6	51.8	
9.3	7.5	19.0		8.7	33.3	10.0	K	8.7	33.8	58.3	K	9.5	20.4	0.7		9.3	12.8	1.6	
7.2	38.9	55.0	K	9.5	35.2	49.6		9.2	53.1	44.7	K	9.3	36.4	38.9		9.5	34.1	19.4	
9.1	34 16.6	7.2		9.4	36.2	30.1		9.5	5 54.8	18.5		9.4	49.2	8.1		9.5	36 13.5	59.2	
9.4	59.4	17.9	B	9.4	39.5	41.8		9.0	55.8	13.0	K	9.4	21 20.1	30.8		9.5	29.8	7.1	
5.3	35 0.1	29.1	G	9.5	49 2.4	21.1		9.5	56.8	4.1		8.8	25.9	11.8	K	8.4	37.9	30.0	K
9.5	5.4	11.4		9.4	36.5	53.5		7.5	6 15.6	13.1	K	9.1	34.5	2.7		9.0	55.3	53.3	
9.5	29.0	27.3		9.5	57.1	14.5		9.5	39.5	4.0		9.5	22 7.2	48.4		9.2	57.2	19.2	
9.5	36 20.2	48.6		9.5	50 6.3	6.8		9.1	52.5	48.1	K	8.4	10.8	54.3	K	9.5	59.6	0.9	
8.8	57.1	26.0	K	8.9	8.2	27.3		9.3	53.4	58.4		9.3	50.5	48.4		9.5	38 15.7	41.5	B
9.2	37 6.5	37.1	K	9.4	29.7	18.3		9.5	7 19.4	15.7	B	9.4	23 14.9	54.5		8.6	19.9	38.1	K
9.5	23.2	5.9		9.5	39.2	45.0		9.4	21.2	42.0		8.8	24 21.5	24.6		9.0	24.3	6.5	K
9.5	49.1	47.1		9.5	51 10.6	14.5		9.5	8 0.0	58.9		8.0	55.6	58.7		9.5	39 6.6	12.8	
9.3	38 11.7	48.8		9.2	14.9	54.1		9.4	13.3	11.4		9.5	25 2.5	5.6		9.4	30.4	34.0	
9.4	16.2	40.6		7.8	55.2	1.5		9.0	13.4	32.7		9.5	6.2	49.1		9.1	37.6	44.1	
9.5	21.4	1.8		9.1	52 21.7	28.5		9.3	31.8	53.5		9.3	8.4	44.7		9.5	51.0	0.4	
9.0	44.1	15.9	K	9.3	45.7	29.2	K	9.1	43.2	23.6	K	9.4	13.7	30.4		9.5	51.5	8.6	
9.0	39 32.3	35.0		8.6	57.5	3.3	K	9.5	9 1.7	4.3		9.1	21.0	6.9		9.5	40 36.3	15.0	
8.6	37.2	33.2		9.5	53 19.2	12.8		9.5	9.4	52.1		9.5	44.9	2.7		9.5	41 21.7	37.7	
8.8	39.6	21.0		9.5	54 5.7	11.7		9.5	20.0	22.2		9.5	26 11.1	52.6		9.5	24.0	43.9	
9.5	40 15.5	2.5		9.1	8.3	51.5	K	9.5	40.8	21.8		9.3	16.8	43.2		8.3	42 0.2	58.9	K
9.5	34.0	50.7		9.5	19.2	23.9		8.9	52.5	36.3	B	9.4	24.7	32.6		9.1	28.8	48.3	
9.5	48.9	8.8		9.5	53.7	35.4		9.4	57.8	35.7		9.4	25.5	19.8		9.3	36.4	31.0	
9.2	41 25.6	27.3	K	9.3	55 4.8	3.1	B	9.3	10 15.4	55.1		9.5	27 12.2	6.5		9.5	37.1	43.8	
9.5	32.0	18.3		9.5	11.0	7.5		9.5	17.0	34.8		9.3	25.5	4.0		9.3	43 3.8	2.4	
7.3	42 5.5	56.2	K	9.4	36.7	28.9		8.7	22.8	52.2	B	9.5	26.6	2.5		9.1	5.2	51.8	
9.1	23.3	18.8	B	9.4	43.5	48.6		9.0	58.4	38.5	K	9.0	29.6	22.3	K	9.0	44.9	19.0	K
8.7	24.7	3.6	K	9.5	52.0	31.0		9.1	11 5.2	18.4		6.0	32.8	26.1	K	6.8	44 0.3	23.7	K
8.9	52.8	44.7	K	8.4	56 2.6	6.4	K	9.5	42.5	40.0		9.0	34.7	52.8		9.5	4.8	39.8	
9.5	43 7.6	50.0		9.4	57 1.8	34.9		8.8	52.8	26.7	K	9.5	28 0.1	28.6		9.1	17.7	26.2	
7.6	7.6	44.7	K	9.0	22.3	56.6	K	9.1	54.3	32.3		9.5	8.9	0.0	B	9.3	22.4	43.4	
9.5	15.2	14.5		9.1	45.6	10.3		8.5	56.4	38.9	K	8.5	23.6	43.5	K	9.0	28.5	1.4	
9.5	18.7	9.6		9.4	55.9	36.5		8.8	59.5	7.6		8.1	39.8	14.4	K	7.3	38.8	56.4	K
9.4	51.6	43.0		9.2	58 36.1	40.5	K	9.0	12 19.8	38.3		9.5	49.4	30.3		8.1	54.7	4.4	K
9.5	56.5	50.3		9.4	38.8	46.7		8.0	21.2	19.2	K	9.5	29 46.2	59.2		8.6	56.2	17.2	K
9.5	44 4.7	2.0		9.5	56.1	5.2		8.9	13 7.5	31.2	K	9.1	30 0.4	14.5	K	8.7	56.6	55.0	K
9.4	8.5	41.6		9.0	57.3	18.2	K	8.8	9.4	58.4		9.1	2.8	16.0	K	9.5	45 8.4	30.2	
9.4	9.2	2.7	B	9.5	59 1.4	45.0		9.5	41.9	38.6		9.5	4.1	52.8		9.4	46 6.0	47.3	
9.5	10.9	7.0		9.2	14.2	49.2	K	9.5	14 0.0	0.9		9.5	25.2	53.3	B	8.7	11.4	13.2	
9.4	21.4	38.5		9.3	56.8	29.3		9.4	21.0	16.4		9.5	40.9	27.1		9.3	14.0	55.5	
9.4	45 4.1	50.9		7.9	0 29.7	45.6	K	9.5	31.7	16.0		8.7	31 3.1	42.4	K	9.0	33.3	36.4	
9.5	4.4	18.3		7.5	1 0.7	0.5	K	8.9	44.9	23.0	B	9.5	6.3	2.6		8.7	47 1.7	30.1	B
9.5	11.9	7.7		9.1	6.2	10.1		9.5	15 22.6	10.1		8.5	15.6	41.4	K	9.5	15.8	54.4	
9.5	25.7	17.8		9.5	21.8	51.4		9.4	23.4	3.7		9.5	19.9	13.8		9.5	22.4	17.6	
9.5	28.6	44.0		9.2	22.1	46.6		9.0	34.2	40.4		8.6	26.0	5.3	K	9.5	48 32.3	2.0	
9.4	43.7	21.3	B	9.3	31.1	51.7	B	9.5	16 23.5	1.3		9.5	26.1	17.8		9.1	49 3.9	26.7	
8.0	44.6	30.5	G	8.9	32.0	31.4		8.5	38.2	25.7	K	9.5	32 19.4	26.7		9.5	21.0	52.1	
8.8	46 3.9	56.4	B	9.3	37.4	54.8		9.5	45.6	50.8		8.7	34.7	18.2		7.9	41.4	47.3	K
9.3	8.2	32.8	B	9.5	2 5.6	2.0		9.1	48.3	41.9	B	9.5	45.0	36.2		9.2	49.0	18.3	
9.4	19.1	3.2		9.5	8.7	38.0		9.4	49.5	29.7	B	9.5	33 2.1	5.1		9.1	55.8	51.1	
6.7	35.0	22.8	G	9.2	10.4	27.2		9.1	17 26.2	18.3	B	9.5	44.6	27.1		9.5	56 9.0	39.2	
8.5	46.7	33.7	G	8.5	25.1	20.3	K	9.1	34.2	16.0		9.5	50.3	2.4		9.5	27.9	0.7	
8.7	55.1	29.5	G	9.5	42.2	47.7		9.1	45.4	30.9		8.9	58.6	54.8		9.5	51 2.2	54.7	
8.3	47 2.8	7.8		9.5	45.4	44.6		9.5	18 10.5	26.0		9.5	34 0.4	39.7		9.4	16.0	0.1	

5201—5205				5206—5210				5211—5215				5216—5220				5221—5223			
	23ʰ		+39°		23ʰ		+39°		23ʰ		+39°		23ʰ		+39°		23ʰ		+39°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	51	28.7	6.0		9.5	52	52.8	40.6	8.3	55	33.0	38.8	K	9.5	57	47.1	52.5		9.1	59	18.0	32.3	
8.2		35.2	59.2	B	9.5	53	48.2	55.7	8.7		34.1	9.1	K	9.5	58	4.4	3.8		8.8		30.6	30.7	K
9.5		48.2	9.5		9.0	54	33.4	13.6	8.0		37.8	12.0	K	9.5		28.2	56.1	B	9.3		44.0	40.3	
9.0		53.2	23.2	K	8.5		38.8	18.4	9.4	56	9.0	50.4		6.7		38.3	36.5	K					
9.5	52	52.7	11.7		9.4		47.9	38.6	9.5		55.3	39.5		9.5	59	0.4	57.1						

Zone +40°

1—40				41—80				81—120				121—160				161—200			
	0ʰ		+40°		0ʰ		+40°		0ʰ		+40°		0ʰ		+40°		0ʰ		+40°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.8	0	9.5	14.5		9.0	8	50.4	28.4	B	9.5	18	49.1	47.5		9.4	28	11.4	25.7		9.1	39	24.2	30.4	K
9.3		31.2	59.9		9.4		54.4	29.2		9.4		51.0	34.4		9.1		32.4	12.4		9.1		46.2	29.9	K
9.5		38.1	21.7		9.4	9	6.3	15.8		8.5		56.8	23.2	K	9.5		46.5	54.4		9.0	40	21.5	48.2	K
9.5		49.6	29.3		9.5		10.9	48.0		9.5	19	2.4	6.0		9.2		55.2	36.6		9.5		44.4	55.8	
7.2	1	21.3	1.9	K	9.1		24.4	8.4		9.5		3.2	10.6		9.5	29	5.0	50.2		8.0	41	4.3	20.8	K
9.1		29.5	17.2		9.5		48.6	39.8		9.5		3.7	34.7		9.2		40.4	17.8	K	8.7		13.9	58.1	K
7.0		34.0	2.4	K	9.0	10	20.3	37.4	B	9.4		13.3	20.1		8.2		44.1	37.6	K	7.6		18.3	17.8	K
9.2	2	5.4	17.1		9.5		43.4	7.8		9.5		27.1	11.0	B	8.1	30	0.7	4.5	K	9.5		36.0	40.2	B
9.5		33.1	35.6		9.2		43.9	55.5		9.5		38.6	25.1		9.0		16.8	35.4	K	9.4		39.5	3.0	
8.9		50.2	0.4	K	9.5	11	26.0	2.5		8.5	20	5.0	43.8		9.5		28.1	40.7		9.4		49.3	24.0	B
9.3		53.6	39.5		9.5		26.1	49.5		8.8		33.9	59.1	K	8.5		35.9	11.5	K	4.7		51.3	17.6	K
9.5		56.4	7.6		8.9		26.6	38.2	K	9.0		37.1	35.6		9.5		53.8	47.0		7.5	42	28.0	1.3	K
9.5	3	8.2	26.3		9.5		36.9	57.0		9.0	21	11.1	37.3	S	9.3	31	9.5	1.8		8.5		28.5	56.7	K
9.5		15.5	56.9		9.4		54.0	49.3		9.0		15.1	36.1		9.5		29.7	2.3		9.3		48.3	47.8	
9.5		31.3	25.3		9.3	12	18.0	52.4		9.5		17.3	38.6		9.5		45.4	52.7		8.7	43	11.9	26.1	K
9.5		41.4	30.9		9.3		28.5	2.3		9.5		31.4	11.6		9.5		47.9	39.5		9.2		13.8	55.9	
9.5		46.5	53.5		7.6		50.4	7.2	K	9.5		35.0	25.7		9.5		54.0	7.3		7.3		30.4	28.2	K
9.5		58.0	37.8		9.1		50.7	41.2		7.6		40.6	2.5	K	9.5	32	17.4	49.9	B	9.5		42.7	58.8	
9.4	4	11.5	6.9		9.2	13	11.5	45.7	K	9.5	22	8.3	24.5		9.5		19.1	47.4		9.5		52.7	50.9	
9.5		31.4	46.2		9.5		11.7	1.6		9.4		21.7	23.0		9.4		31.5	5.7		9.5	44	7.3	28.2	
9.4		31.7	22.5		9.4		15.6	40.2	B	9.5		35.5	22.6		neb		32.0	53.5		9.3		22.1	44.4	B
9.1		57.4	9.4		9.5		26.3	18.4		9.4		57.4	7.6		8.8	33	5.5	55.8	K	9.3		24.5	46.6	
9.4	5	27.2	50.9	B	9.5		39.0	22.8		8.5		58.4	12.3	K	9.5		37.0	34.3		9.2		39.8	44.2	K
9.5		33.9	11.2		9.5		46.0	31.9		7.3	23	8.0	42.9	K	9.5	34	15.2	35.5		8.8		44.5	8.8	K
8.9		48.1	42.8	K	9.5		46.8	59.8		8.1		10.0	51.5	K	9.0		35.4	9.8		9.5	45	16.0	23.7	
9.5		51.4	25.9		9.5	14	43.9	59.3		9.0		17.9	46.6	K	8.8		45.0	54.3		8.5		52.7	41.8	L
8.6		56.0	48.7	K	9.5	15	27.0	11.1		9.0		22.5	43.4	K	neb		48.5	3.9	K	9.5	46	38.0	57.8	
9.4		58.1	42.4		9.4		56.0	2.2		9.5		41.5	21.8	B	neb		49.7	28.4	L	9.3	47	33.0	46.5	
5.7		59.4	14.1	G	9.5	16	33.1	37.5		9.2		47.0	54.2		9.1	35	20.4	12.9		9.4		36.0	44.4	
8.9	6	4.0	2.7		8.8		36.2	35.2	K	9.1		49.1	59.4	K	9.5		44.4	6.2		9.4		36.9	40.2	B
8.6		8.9	56.1	K	9.3		48.7	0.4		9.4	24	44.7	44.4		8.9	36	9.7	46.9	K	9.1	48	27.5	7.1	
9.4		29.1	36.6		9.4		56.5	3.0		9.4		58.4	55.0		9.5		17.4	7.0		9.5	49	6.3	28.2	
9.0		58.2	33.6		8.8		58.8	31.2	K	9.4	25	23.4	55.4	B	9.5		37.5	16.0		9.3		48.4	7.8	
6.9		59.4	13.3	G	9.4	17	2.2	45.6	B	9.5	26	47.0	53.6		9.0		54.2	30.8	K	9.2	50	21.5	55.4	
9.4	7	3.4	15.8		9.3		16.2	30.7	K	7.5	27	12.9	34.4	K	9.5	37	42.9	57.0		9.3		22.0	29.3	
9.5		12.5	45.7		9.4		16.5	30.5		9.1		46.9	59.8		9.0		45.2	23.5	K	9.5		36.9	17.2	
8.7		14.4	57.5	K	9.2		32.2	32.6		9.4		49.6	39.3		9.1	38	9.4	44.4	K	9.4		45.1	4.0	
9.3	8	0.1	46.0		8.5	18	20.5	44.0	K	9.1		54.9	57.3	K	7.5		6.7	0.8	K	9.5	51	13.8	36.6	
9.0		4.6	39.8	K	9.5		26.2	29.9		9.3	28	2.0	46.2	K	9.5		11.2	30.9		8.5		19.0	9.5	B
9.5		27.2	29.4		9.5		32.3	25.0		9.4		5.2	3.7		9.5	39	3.0	8.3		9.4		34.2	56.3	

201—260				261—320				321—380				381—440				441—500			
	0ᵘ—1ᵘ		+40°		1ᵘ		+40°		1ᵘ		+40°		1ᵘ		+40°		2ᵘ		+40°	
m	′	″	′		′	″	′		′	″	′		′	″	′		′	″	′	
8.9	51	37.5	48.8		9.3	9	20.8	25.2	8.8	26	39.8	2.6	9.5	42	4.1	16.0	8.8	0	2.7	41.5
9.2		43.0	23.3		8.5		29.7	15.0 K	9.1		41.0	39.5 K	9.5		48.5	34.8	8.5		12.0	6.9 S
9.1	52	1.5	46.3		9.5		44.9	28.2	9.4		49.1	38.5	9.5		53.5	16.0	9.4		14.7	9.2 B
9.1		57.2	2.0 K		9.4	10	27.7	44.6	9.5		50.2	59.7	9.2		56.5	44.6 K	9.5		34.1	40.2
9.2		59.4	31.4		9.4		29.0	0.9	9.3		53.6	36.5 B	9.5	43	6.2	53.7	9.4		40.8	54.9
9.4	53	15.3	23.0		9.0		52.5	34.5 K	9.5		55.7	48.3	9.4		33.8	29.1	9.0		42.4	14.3
9.5	54	6.5	38.7		9.5	11	30.7	15.6	9.5		59.5	8.6	9.3		33.9	26.4 B	9.4	1	18.7	15.2
9.5		40.1	45.3		8.7		59.3	37.6 K	6.8	27	21.7	20.5 K	9.0		40.3	42.7 K	9.5		33.6	34.2
6.0		47.4	33.1 G		9.2	12	39.8	8.2	9.0		53.1	24.7	9.3		42.2	55.2	9.3		39.6	57.8 K
9.5	55	48.4	28.5		9.0	13	6.2	21.2 K	9.5	28	2.1	2.0	8.0	44	5.5	44.9 K	9.4		51.0	12.8
9.5	56	6.1	2.0		9.1		9.1	12.9 K	9.5		20.6	7.8	8.8		12.5	51.0	9.4		54.5	21.5
8.5		21.9	58.2		9.4		50.3	43.5	4.0		23.1	40.9 K	9.3		29.2	21.2	9.3	2	3.3	54.2
9.1		28.8	6.8		9.3	14	0.7	55.0 K	9.5	29	6.3	26.8	9.4		31.9	31.0	9.5		8.9	0.1
9.1		53.8	55.7		9.5		12.3	52.4	8.3		33.5	26.5 K	6.0		38.0	1.7 K	9.4		14.5	49.8
8.8		54.2	43.1		9.5		15.7	10.1 B	9.5		37.1	2.2	9.3		45.4	57.7 K	9.4		34.5	20.1
8.5	57	22.7	27.5		9.3		36.8	50.4 K	8.0		47.5	10.3 K	9.4		57.2	26.8	8.5		56.9	2.2 K
8.3		56.8	11.3 K		9.5	15	19.7	30.2	8.2	30	16.5	1.3 B	9.2		57.3	24.1 B	9.5	3	21.5	4.8
9.0	58	7.8	44.5		8.5		46.3	24.7	9.1		18.1	22.1 B	9.3		59.5	29.6	8.0		37.5	46.8 K
9.5		36.1	28.9		9.5		50.5	3.0	9.4		24.5	2.2	9.5	45	12.8	55.4	9.5		44.5	14.1 B
9.5		40.8	56.6		9.5	16	59.8	4.0	8.4		30.0	20.1 K	8.7		48.1	10.7 L	9.3		53.0	28.6
9.0	59	13.7	18.8 K		9.5	17	3.7	44.5	7.3		35.0	26.8 K	9.1		56.7	56.0 K	9.3	4	17.5	42.2
6.8		17.2	28.9 G		7.5		6.3	35.6 K	9.5		48.5	40.0	9.4	46	38.6	37.4	7.3		37.3	6.1 K
8.9		22.8	31.8 B		9.2		37.9	55.1	9.4	31	17.3	51.5	9.4	47	38.2	23.9 B	9.3		49.5	50.2 K
6.5		35.4	45.2 G		9.1	18	18.9	5.2	7.0		23.5	55.9 K	9.5	48	1.5	36.7	9.5		56.0	13.2
9.5		46.5	21.5		9.1		29.1	52.1 K	9.5		26.6	29.9	9.1		29.6	47.5 K	9.5	6	13.3	1.9
9.0		55.0	41.4 L		9.3		35.8	26.8	9.3		59.4	30.0	8.5		33.1	3.4 K	8.9		31.0	26.1
9.5	0	12.8	53.7		8.2		44.3	27.1 K	9.0	32	11.5	52.4 K	6.9	49	10.3	59.3 K	8.4		34.5	27.4 B
9.0		41.4	0.6 B		9.4		57.5	27.2 B	9.1		55.4	54.5	6.9		10.5	3.4 K	9.4		45.6	28.2
9.5	1	50.1	37.9		6.0	19	3.3	20.9 K	9.4	33	13.2	37.6	8.4		12.6	15.2 K	8.3	7	1.3	5.4
9.2	2	1.7	39.9 B		9.5		16.4	30.5	9.4		37.1	4.8	9.0		13.0	7.4	9.3		8.2	40.8
7.5		2.5	9.2 K		9.1		17.7	48.1	8.5	34	8.7	35.0 K	7.3		20.1	41.1 S	9.5		31.0	44.1
9.5		3.0	47.7		9.3		49.2	42.5	8.2		13.5	52.9 K	8.2		39.2	12.4 K	9.5		53.8	53.1
9.1		7.8	7.9		9.4	20	8.6	4.7	8.5		50.1	14.6 K	9.3	50	12.5	55.8	8.4	8	43.0	8.0 B
9.3		32.3	41.5		9.5		16.0	51.1	9.5	35	21.3	17.3	8.4		42.9	31.6 K	9.3		55.5	54.1
7.0	3	0.2	28.2 K		9.2		40.5	57.1 K	9.0		33.7	26.1	7.0		57.1	39.1 K	8.8	9	6.1	11.8 B
9.5		22.7	17.8		9.4		48.2	3.3	9.5		45.7	52.5	9.0	51	8.0	14.3	8.0		20.5	38.7 K
9.3		26.8	28.2		9.5	21	13.5	0.0 B	9.5		57.6	43.2	9.2		23.0	8.2	9.5	10	14.0	14.5
9.5		45.3	29.3		9.3		21.8	26.1	8.9	36	1.4	28.2 K	8.8		47.4	12.3 K	9.5		18.0	23.1
8.3		47.5	20.9 L		9.3		25.8	27.7	9.5		38.3	55.0	9.2		51.6	2.4 K	9.4		20.2	38.6
9.0		48.8	52.2 K		9.3		40.2	29.3 B	9.1	37	38.5	45.9	8.9		56.8	12.9 K	9.3		22.5	55.8
9.3		55.0	56.4		8.8		42.7	47.0	9.1		40.6	51.8	7.6		57.9	40.1 K	9.3		49.3	43.6
8.8		58.8	46.0		8.8		46.3	58.8 K	7.5		43.0	15.6 K	9.5	52	20.1	45.6	9.5		52.5	5.0
9.2	4	3.1	4.8		9.2	22	0.9	33.3 K	9.2		56.2	58.4	7.0		26.4	31.1 K	9.4	11	33.3	47.7
7.3		3.1	9.0 K		9.5		7.7	9.4	7.8		57.4	49.9 K	9.3		35.0	21.8	9.0		44.0	5.0 K
7.8		10.4	32.7 L		9.2		35.6	9.4 B	9.5	38	17.1	22.6	9.3		42.4	23.1 B	9.5	12	15.7	2.5 B
9.5		18.8	28.2		9.4		36.4	13.2	9.5		18.1	9.2	9.2		48.5	25.1 K	9.4		16.8	3.2 B
9.5		36.1	45.0		9.5		58.5	2.5	9.5		18.3	27.8	9.5	53	26.4	4.9	9.0		20.5	43.6
7.0		46.9	53.8 K		8.8	23	36.8	8.7	9.5		19.7	54.8	9.2		39.1	34.6 K	9.2		20.5	53.1
7.3	5	5.4	28.9 K		8.3		38.5	19.2 K	9.5		43.1	13.5	9.1	54	12.2	6.7	9.1		25.1	25.6 B
7.3		19.3	23.7 K		9.4		41.0	27.9	9.4	39	21.6	31.3	9.1	55	56.3	1.5 K	9.5		29.4	2.7 B
9.2		32.1	20.9 B		9.1		43.0	34.3 B	9.5		41.7	37.2	9.5	56	16.6	38.1	9.1		40.0	3.8 K
8.5	6	30.2	16.4 K		8.8	24	40.4	7.2	9.5		53.2	6.0	9.0	57	4.2	47.8 K	9.4		45.5	0.7
8.8		31.9	55.4 K		8.7		40.7	1.6 K	8.3	40	2.5	14.2	9.0		10.4	46.3 K	8.8		50.1	40.7
9.1	7	9.8	3.3		9.5		47.7	46.9	8.3		14.2	32.8	7.3		12.0	50.2 K	9.4	13	18.3	12.6
9.5		39.4	23.0		7.0	25	4.6	8.4 K	8.8		15.1	1.6 K	9.5		46.0	1.8	8.4		21.0	30.5 K
9.2		53.9	8.4 B		9.5		6.6	56.5	9.4		31.5	44.2	9.3	58	11.3	25.2 B	9.5		27.5	57.5
9.5		54.4	20.0		7.8		9.0	15.3 K	8.8		34.8	6.0	9.4		13.0	35.0	9.5		32.7	50.1
9.2		59.0	24.1		9.5		24.2	54.4	8.3		38.0	14.3 K	9.5		18.1	56.4	9.3		39.3	7.3 B
8.0	8	11.1	6.4 K		9.5		59.0	14.6	9.5	41	13.5	54.7	9.5		46.4	20.5	9.4		49.4	9.1
9.0		12.4	8.7 K		9.5	26	12.9	30.5	9.5	42	2.8	43.8	8.7	59	44.9	56.8 K	6.3		51.1	43.5 K

501—560				561—620				621—680				681—740				741—800			
	2ª	+40°			2ª	+40°			2ª—3ª	+40°			3ª	+40°			3ª	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
7.6	13 53.5	48.9	K	9.0	28 40.9	7.9		9.5	46 38.3	45.1		8.9	0 43.4	14.3		9.2	16 12.0	47.8	B
9.5	14 19.0	12.5		9.0	50.3	24.7	B	8.7	42.4	34.8	K	9.3	1 34.0	54.5		9.5	13.4	6.1	
9.3	15 1.2	57.1		8.9	29 51.5	42.9		9.5	51.0	24.3		8.8	57.3	47.5		9.2	36.3	13.5	
9.3	10.0	26.1		9.3	56.4	13.7	R	8.6	47 0.6	52.1	K	7.8	59.2	37.2	K	8.8	39.8	29.0	
9.4	10.5	13.4		9.5	30 8.0	42.0		8.9	8.9	52.4	K	9.5	2 5.0	5.8		9.4	54.3	3.4	
9.5	17.1	17.4		9.1	31 3.5	56.6	B	9.5	52.0	12.7		8.5	29.9	53.0	K	9.1	17 4.9	18.6	
9.3	18.9	7.2		8.7	23.5	42.3	K	9.3	57.4	22.5		8.7	52.8	56.7	K	8.8	10.6	17.7	B
9.5	57.0	29.1		8.3	32 20.8	16.5		8.7	48 21.3	23.1	K	9.5	3 2.6	8.0		8.3	12.9	5.3	K
9.5	16 8.0	49.2		9.5	22.6	30.5		9.3	23.0	35.5		9.3	2.9	5.8	B	9.4	23.0	29.3	B
9.1	29.0	42.0	K	7.2	48.0	47.2	K	9.3	53.7	43.6		9.4	10.2	4.8		8.5	23.2	45.8	K
9.5	38.7	27.5		9.5	33 1.2	6.2		9.3	55.7	30.3	K	8.2	13.4	53.5	K	9.3	42.5	33.0	B
9.5	42.5	25.4		9.5	8.3	56.4		9.5	49 32.4	30.4	B	9.0	4 9.7	38.5		9.5	18 11.2	14.6	
8.3	58.0	14.5		8.6	9.0	37.8		9.5	39.6	30.4		9.5	14.3	14.4		9.4	15.3	6.4	
8.2	17 8.5	13.5	L	9.5	34 4.7	7.2		9.2	48.5	4.6		8.8	32.7	20.8		9.5	24.6	27.1	
9.2	9.3	54.9		9.0	9.0	1.5	K	9.1	54.9	50.1		8.2	33.8	54.3	K	9.5	27.8	51.6	
9.1	18 3.0	40.0		8.5	14.0	29.0		9.5	58.9	27.4		9.5	40.6	20.8		9.5	32.5	56.0	
8.2	15.6	52.0	B	7.1	29.8	52.7	B	9.3	50 6.7	35.4		9.4	5 28.1	54.6		9.5	33.2	46.1	
9.4	18.5	10.8	B	9.3	38.2	29.0		9.4	14.7	55.8	B	9.0	41.7	37.1	K	9.5	53.8	31.5	
9.5	19.4	5.3		9.1	55.8	17.6		6.5	19.0	26.7	K	9.0	6 29.6	27.0		9.5	19 4.3	12.8	
7.9	22.5	17.1	B	9.5	57.5	23.5		9.0	23.8	6.6		9.5	53.2	59.5		9.4	11.8	58.6	
7.7	27.0	23.5	L	9.0	35 2.2	8.9		8.4	27.4	14.7	K	9.5	7 22.8	24.8		9.5	14.9	16.5	
8.8	42.5	49.6		9.0	5.8	30.3	K	8.3	56.9	33.0		9.5	8 5.0	54.6		8.3	19.8	7.6	
8.5	57.8	56.5	K	9.5	11.0	28.8		9.5	51 41.3	21.0		9.5	27.8	21.0		8.0	55.3	5.6	
7.8	58.5	35.7	L	9.3	14.3	56.9	K	7.5	51.3	13.8	K	9.1	31.0	10.1		9.3	20 5.8	53.0	
8.8	19 5.5	30.9		9.5	51.8	14.8		8.3	52 10.9	18.5	K	9.2	54.3	8.0		8.5	15.0	40.5	
9.3	31.8	48.1		9.5	54.3	35.3		9.5	15.3	27.6		9.5	9 10.5	20.2		9.1	17.4	58.8	
8.7	35.6	45.1	B	9.5	36 2.7	42.7		9.3	15.7	42.4		9.0	25.0	38.8	K	8.9	50.0	28.2	R
9.5	53.0	16.6		9.5	24.1	59.4		9.5	33.0	59.6		9.4	30.5	31.4	B	9.5	50.8	41.8	
9.5	20 4.3	0.1		7.7	37.0	18.3	L	9.0	48.0	47.8	K	9.5	35.0	25.6		9.5	53.2	20.8	
9.5	7.4	55.9		8.8	56.2	50.5		9.3	51.8	55.4		9.4	35.8	3.7		9.1	21 34.2	47.0	
9.5	9.8	5.7		9.4	37 0.9	36.2		8.3	53.5	48.1	K	9.3	46.1	24.7	B	8.8	34.5	18.1	K
9.5	19.0	32.0		9.2	22.7	13.7		9.4	53 5.3	3.1		8.7	10 8.3	26.8	K	6.5	53.6	15.6	K
9.1	22.5	46.4	K	8.2	36.6	0.4	K	8.5	25.7	39.9	K	9.3	18.6	8.0		9.5	59.8	26.2	
9.2	26.0	37.7	B	9.5	45.7	34.0		9.5	28.0	19.3		9.5	11 11.4	13.8	B	9.1	22 18.0	32.4	
9.3	21 6.0	36.6	K	9.0	50.0	55.4		9.3	39.9	54.8		9.5	23.8	34.3	B	9.4	27.8	38.3	
9.5	39.0	17.5		8.6	38 9.5	15.8	K	8.0	47.4	46.3	K	9.4	24.2	40.6		7.2	40.5	25.6	K
8.3	40.3	3.0		8.8	17.6	23.4		9.5	55.3	34.8		9.4	29.7	18.3		9.4	23 25.4	8.3	B
8.7	43.3	45.5	K	9.3	30.0	20.9	B	9.2	58.6	21.4	B	9.5	41.0	24.9		9.5	27.4	12.3	
9.3	22 9.5	53.0		9.4	35.1	14.8	B	7.6	54 1.5	59.3	K	9.5	12 33.0	20.4		9.0	28.0	49.2	K
9.4	11.1	58.5	B	9.0	38.7	19.1		9.4	9.9	17.5		9.3	58.3	54.1	B	9.5	39.2	43.5	
9.5	21.2	59.8		9.5	55.3	40.9		9.5	20.2	11.5	B	9.5	13 3.2	8.6		9.0	50.8	52.5	
8.5	21.7	34.1	B	9.0	39 12.7	23.0	K	8.5	23.0	38.8	K	9.3	10.4	59.1		9.0	24 14.5	40.3	
9.5	28.9	56.2		9.2	21.8	20.5	B	7.3	55 55.3	33.2	K	9.5	12.3	38.2		8.8	18.8	19.6	
9.5	41.2	3.9		9.5	29.5	35.1		6.5	59.9	0.9	K	9.5	39.2	1.1		8.8	22.4	29.9	R
9.4	58.6	22.9	B	9.4	30.4	3.7		9.5	56 1.7	37.9		7.3	55.8	40.7	K	9.2	23.8	2.1	B
8.9	23 32.7	51.8		9.3	40.6	19.8		9.5	15.8	45.1		9.1	14 11.7	35.4	K	9.5	42.8	27.9	
8.8	25 7.4	47.3	K	9.3	49.7	28.4		9.5	45.3	18.8		9.4	14.1	52.5	B	9.5	25 13.4	55.3	
9.5	27.6	2.7		9.5	40 38.8	26.6		9.1	57 23.0	52.4	K	8.5	19.8	5.1		8.9	28.5	14.0	
9.2	29.3	11.2	B	9.1	51.0	54.5		9.3	48.0	23.3		8.2	20.0	48.5	K	9.5	45.2	54.0	
9.3	26 11.5	11.6		8.3	59.9	13.6	K	9.1	58.6	14.4		9.5	29.1	56.3		9.5	58.1	7.8	
8.2	43.6	3.6	K	9.5	41 12.0	7.3		8.8	58 23.5	30.2	K	8.5	34.0	29.4		9.5	26 18.3	45.7	
9.0	50.5	8.2		9.0	13.0	41.4	K	9.2	33.7	55.3		8.5	36.8	12.5		9.4	42.7	30.1	
8.9	27 0.3	54.3		9.5	15.5	49.2		var	44.5	24.5	K	7.5	15 12.3	13.8	L	9.2	46.1	12.8	
8.6	23.0	50.2	K	9.5	51.6	7.7		9.1	59 31.3	4.6		9.4	23.8	18.3		9.1	27 19.3	37.7	
9.3	24.8	36.1		9.3	42 2.7	19.6		8.6	38.0	44.3	L	9.4	30.0	1.9		9.1	24.6	4.8	
9.0	28.0	27.6	K	9.0	51.5	4.7		8.6	40.0	16.3	K	6.5	34.0	44.3	K	8.0	45.9	2.7	K
9.0	38.3	37.7		9.1	43 6.2	4.2		9.5	58.4	9.0		7.0	45.7	27.0	L	9.1	56.3	5.3	
9.3	39.5	50.5		8.8	44 6.9	3.9		9.0	0 5.3	48.0		9.5	50.8	24.0		9.1	28 6.8	16.3	
9.5	28 11.6	52.4		9.3	46 27.0	49.5		9.2	14.4	55.1		9.5	53.2	57.5		9.5	15.2	5.6	
9.2	20.3	57.3	R	9.1	31.2	54.8		8.5	23.5	22.5	B	9.5	53.7	15.1		9.4	22.3	31.7	B

801—860				861—920				921—980				981—1040				1041—1100			
	3ᵘ		+40°		3ᵘ—4ᵘ		+40°		4ᵘ		+40°		4ᵘ		+40°		4ᵘ		+40°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	28	24.0	33.7		9.2	46	32.6	25.9	B	9.1	7	18.2	21.4		9.5	22	39.7	54.7		9.4	36	10.7	43.0	
8.5		37.3	21.8		9.5		35.7	22.3		9.4		24.0	1.8		9.2		48.0	34.5		9.5		15.1	52.9	
9.1	29	8.7	41.8		8.4		56.3	15.2		9.5		45.3	58.7		8.5	23	5.3	33.6	K	8.5		26.4	38.2	
8.8		14.3	38.7	K	9.5	47	41.2	24.8		9.5	8	29.5	43.4		9.4		5.5	23.1		9.5		42.2	48.7	
9.5		19.7	29.7		9.2	48	11.9	35.6		9.4		31.7	19.8		9.5		6.4	24.7		6.5		44.9	2.8	K
8.3		26.4	53.6	K	9.5		22.9	33.2		9.0		40.6	55.3		9.2		19.4	53.0		9.3	37	0.5	52.0	
7.9		30.3	48.7	K	9.3		27.7	52.9		9.5	9	2.9	55.4		8.8		20.0	12.2	K	9.5		1.3	53.2	
8.8		43.8	21.7		9.1	49	4.8	50.5		8.2		14.1	34.7	L	9.1		27.1	31.3		9.4		16.3	32.0	
9.5	30	22.6	2.5		9.0		24.7	49.8		8.0		18.5	38.9	L	9.5		36.5	23.0		9.1		17.7	25.6	
9.0		32.3	30.1		9.2		32.5	23.0		9.5		31.4	3.2		9.0		55.2	36.2		9.5		31.9	33.3	
9.5	31	4.0	9.5		9.5		58.2	49.3		9.2		53.2	32.0		9.0	24	4.9	59.7	K	9.0		53.1	2.4	B
8.8		14.1	50.4	K	8.8	50	8.9	29.8		9.2	10	5.9	47.8		9.2		7.8	38.5		9.4	38	12.9	31.1	
7.0		14.8	42.3	K	9.4	51	56.6	13.9		9.2		6.9	42.5	B	9.3		32.8	53.2		9.4		23.3	31.3	
9.4		19.3	15.3	B	9.4		58.2	23.5		8.8		11.1	8.9		9.4		37.2	22.5		9.1		24.6	26.4	
9.3		40.7	39.8		8.5	52	3.5	30.3		9.5		45.6	35.1		9.1	25	1.0	28.6		9.2		33.5	3.4	
8.7		57.9	59.5	K	8.0		7.2	8.8	K	8.9		51.2	28.6		9.3		24.3	49.9		9.5		41.8	50.2	
8.5	32	17.3	24.4	L	8.8		22.3	32.0	K	9.2		54.9	2.0		9.0		34.5	28.5		9.5	39	7.6	32.5	
9.3		18.6	53.7		9.0		55.5	0.5		9.5	11	11.7	39.1		9.5	26	11.7	4.3		9.4		15.8	44.7	
8.9	33	20.0	16.3	K	8.7	53	8.9	42.9	K	9.0		25.2	49.4	K	7.8		37.1	46.6	K	9.5		21.0	59.8	
8.9		21.7	28.3		9.4		18.8	7.5		9.5		51.0	23.2		5.0		39.2	58.0	K	9.2		47.4	40.0	
7.8		25.2	31.7	B	8.0	54	40.1	41.8	K	9.2	12	0.0	49.0		9.5	27	20.2	36.5		9.2	40	34.9	36.0	
9.4		32.0	44.0		8.7	55	25.6	1.6	K	9.1		2.2	55.4		9.0		23.0	33.0		8.2		43.6	20.9	K
9.5		40.3	32.4		9.5		33.0	49.4		9.5		8.9	8.4		9.3		53.0	46.4		9.1	41	0.3	43.4	
9.5		50.1	10.2	B	9.3	56	11.2	22.5		9.5	13	25.0	4.6		9.5		55.0	42.7		9.2		32.9	28.5	
8.5		50.5	26.3	L	9.2		25.8	2.3		9.3		26.7	7.1		8.5	28	10.4	48.9	K	9.5		46.1	10.0	
9.5	34	30.9	11.4		9.5		35.2	39.3		9.2		33.0	28.0		9.5		27.1	14.5		8.7		52.5	41.7	
9.3		51.6	36.0	B	9.2		56.5	24.3		9.5		46.4	13.9		9.2		42.5	35.5		9.5		54.6	22.7	
7.8	35	4.8	28.5	K	9.1		59.8	8.5		9.1		52.7	44.0	B	9.5		48.0	23.7		8.3	42	3.5	16.7	K
8.8		40.6	3.3		9.5	57	4.0	39.1		9.0	14	13.2	36.8		8.7	29	1.9	57.4	K	9.4		5.0	23.5	
9.5	36	35.8	7.5		9.0		27.8	20.5	B	9.5		15.0	56.5		9.0		6.9	55.5	K	9.4		16.2	35.4	
8.5		38.7	2.3		9.1		30.2	12.8		9.3		42.2	3.1		9.5		19.7	48.5		9.5		39.3	27.7	
9.5	37	49.8	3.8		8.9		37.3	10.4	K	9.0		59.2	4.1		9.4		22.4	44.1		8.7		40.9	14.8	K
8.9	38	10.6	35.2		9.5		41.2	27.1		9.0	15	1.2	5.4	B	9.0		24.8	13.5	L	9.5		54.6	53.3	
8.4		16.3	41.7		9.4	59	21.9	16.1		9.0		10.5	36.4		9.4		27.9	10.5		8.7	43	19.1	48.9	K
7.2		18.3	4.2	K	9.4	0	5.6	24.6	B	8.8		11.4	18.1	L	9.5		57.6	1.3		9.4		37.5	34.6	
9.0		46.2	30.1		9.3		8.0	3.0		9.5		16.2	57.5		9.5	30	1.0	57.0		9.5		50.0	29.8	
9.4		48.5	59.6	B	8.7		36.3	52.7		8.5		41.1	6.3	K	6.5		11.9	29.8	K	8.2		54.5	10.1	K
9.1		51.5	28.5		8.5	1	3.5	36.5	K	8.1		51.9	16.4	K	9.5		13.4	1.3		9.1	44	9.0	43.6	
9.4		55.8	50.5		8.2		6.9	22.5	K	8.9	16	10.2	15.2	K	9.4		14.3	16.0		9.2		13.3	0.6	
9.5		56.1	54.8		8.5		23.8	11.6	L	9.4		28.9	27.9		8.7		24.5	33.5	K	9.4		20.9	28.9	
9.4	39	14.2	18.6		9.5		27.0	50.2		7.3		44.0	48.5	K	9.5	31	3.6	48.3		9.1		23.7	50.6	
7.3		15.0	13.6	K	9.5		27.8	45.4		9.3	17	41.5	33.1		9.5		42.4	11.9		9.5		39.8	56.4	
9.5		59.8	30.0		7.0		33.3	32.0	K	9.5	18	8.8	29.8		9.4	32	23.9	53.8		9.5		43.8	25.6	
9.0	40	21.3	38.2		8.0	2	54.3	16.7	L	9.0		16.9	41.8		9.5		32.7	25.4		9.5		45.4	55.3	B
9.3	41	57.0	10.1		9.4		58.9	49.2		9.5		31.7	59.4		9.5		38.8	38.2		8.3	45	4.1	30.6	K
9.5	42	16.3	54.3		9.0	3	3.2	27.5		9.0		56.8	44.1	K	8.5		57.8	6.3	K	9.0		12.3	29.6	
7.2		21.5	21.5	K	9.5		3.5	38.3		8.8	19	4.5	36.7	K	9.4	33	15.4	27.8		8.5		16.0	20.2	K
9.5		33.6	58.0		9.4		16.2	52.7		9.5		30.5	25.1		9.4		20.8	27.2		9.0		32.9	39.7	
9.0		42.3	33.8		8.6		21.5	11.6		9.4		43.0	40.1		9.2		40.7	13.0		9.5		43.4	50.5	
8.8		50.3	35.6	K	9.5		33.9	23.0		9.3	20	20.9	49.0		9.2		49.2	11.3		9.3		52.4	17.4	
8.8	43	14.8	45.7	K	8.3	4	24.2	40.7		9.4		29.2	21.8		9.0		53.7	43.7	K	9.4	46	4.0	15.7	
9.5		42.6	55.0		4.8	5	1.5	6.3	K	9.5		37.0	50.1		6.2	34	10.8	30.6	K	9.3		4.3	58.4	
8.7	44	1.6	53.9	K	9.1		10.9	11.9		8.7		38.1	9.5		9.3		31.4	36.8		9.5		7.2	13.0	
9.3		4.6	24.4		9.5		47.6	50.2		8.6		41.2	46.3		9.2		35.3	45.0		9.5		10.9	45.0	
8.2		45.8	53.3	K	9.4	6	2.4	29.1		9.2	21	3.9	13.5		9.5	35	12.0	18.6		9.4		26.4	55.5	
8.9	46	5.8	23.0	K	9.5		10.5	13.7		9.3		6.2	14.3	B	9.3		19.5	3.2		9.5		43.2	52.9	
9.5		7.4	2.7		9.4		21.5	1.9		9.4		42.8	31.0		9.5		20.5	23.0		9.5		48.8	34.0	
9.3		8.9	51.5		9.3		23.9	19.2	B	9.5		47.9	27.7		9.4		56.4	11.0		9.4		49.5	54.6	
9.1		21.0	23.9	K	8.9		38.2	19.0	K	8.5	22	15.5	29.6	B	9.0		57.4	8.9	B	9.3		49.9	5.6	
9.3		28.3	31.1		8.3	7	14.5	14.3	K	9.5		20.9	59.7		9.0		58.7	20.4		9.4		50.9	53.2	B

1101—1160				1161—1220				1221—1280				1281—1340				1341—1400			
	4ᵘ	+40°			4ᵘ—5ᵘ	+40°			5ᵘ	+40°			5ᵘ	+40°			5ᵘ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.3	47 9.9	54.6		9.5	54 47.2	25.8		9.5	5 13.4	21.7		9.5	14 38.4	19.7		9.5	25 57.6	30.5	
9.0	11.4	16.3	K	9.4	53.2	22.8	B	9.3	18.8	12.8		9.2	51.5	0.2		9.1	26 1.5	46.0	
9.5	12.2	46.1		9.4	55 10.9	40.4		9.2	27.6	7.1		9.5	15 22.5	15.5		8.5	4.8	4.2	K
9.3	12.3	42.8		8.7	14.3	21.2		9.5	49.6	8.4		9.4	38.6	30.8		9.1	24.2	59.1	
9.4	26.1	20.5		9.3	14.3	25.5		8.4	53.7	55.3	K	8.9	16 5.3	6.7	K	9.4	35.4	21.1	
9.3	32.4	48.6		9.0	20.7	3.2		8.9	6 6.1	17.5		9.4	21.0	13.3		6.7	44.0	5.0	K
9.5	32.7	43.2		9.2	50.5	45.6		9.5	19.5	5.6		9.3	48.5	43.1		8.4	47.2	12.6	K
9.5	34.9	45.5		9.3	56 6.4	40.2		9.2	23.5	1.7		9.4	17 6.0	31.3		9.4	50.5	8.1	
9.5	36.0	41.2		9.5	17.4	50.0		9.5	54.4	26.6		9.5	8.5	47.6		9.2	27 4.0	5.6	
9.5	38.0	20.9		9.2	22.6	38.0		9.4	7 7.2	1.1		9.1	23.8	34.3		9.5	11.4	38.1	
9.5	38.6	42.7		8.0	24.7	24.9	K	8.9	10.6	37.9		7.7	26.6	31.1	K	9.5	20.2	55.0	
9.5	43.3	22.5		9.2	37.5	16.5		9.4	11.0	23.1		9.3	38.5	27.4		9.2	30.1	42.7	
9.2	50.4	50.6		9.0	57 2.0	58.1	K	9.5	38.8	32.8		9.5	44.2	12.8		9.4	34.6	34.3	
8.5	48 26.3	33.0		9.5	3.6	8.7		9.5	39.3	35.3		9.4	45.8	4.4		9.5	53.0	13.0	
9.2	31.1	39.7		9.3	8.1	45.3		9.0	41.6	24.1		9.4	54.5	12.1		8.5	28 13.2	31.1	K
8.4	46.0	1.4		9.0	10.3	43.2		8.9	42.7	38.7		8.5	55.7	13.8	K	9.5	19.3	13.0	
8.7	47.2	48.4		9.3	20.0	54.6		9.3	45.4	12.8		8.5	58.0	12.8	K	9.5	20.7	40.7	
9.4	54.3	3.1	B	9.5	23.5	40.8		9.5	8 2.5	1.7		9.0	18 2.8	14.0	K	9.5	27.5	57.7	
9.5	56.3	50.6		9.5	43.0	21.0		9.1	2.8	53.3		9.5	9.0	1.0		9.4	31.0	26.1	
8.9	49 8.0	50.1	K	9.4	58 1.3	16.3		6.7	32.7	18.0	K	8.6	12.5	41.7	K	9.4	58.6	34.5	
9.2	8.5	3.0		9.2	6.0	33.3		9.5	36.5	23.0		9.5	33.7	22.9		9.5	29 13.5	32.2	
9.5	34.7	36.2		9.5	19.1	17.3		9.4	36.5	36.7		9.3	38.4	59.0		9.5	15.5	50.8	
9.5	52.9	1.3		9.1	19.5	12.2		9.5	42.0	31.4		9.1	19 4.4	58.5		9.4	17.9	20.7	
9.3	50 8.2	49.1		9.4	59 6.1	2.0		8.7	44.6	15.0	K	8.8	10.0	17.0	K	9.4	33.6	3.7	
7.9	17.0	7.0	K	9.5	11.4	44.1		7.3	45.7	56.2	K	9.0	14.7	29.8		9.5	50.0	50.6	
9.5	35.4	33.2		9.4	12.0	58.0		9.3	9 18.0	33.5		9.2	23.9	43.6		9.5	50.4	32.3	
9.0	37.9	39.0		9.4	26.2	12.3		8.5	20.6	53.1	K	9.5	30.3	11.7		9.5	30 33.5	19.5	
7.4	39.3	0.9	K	9.5	36.5	35.3		8.9	25.8	12.2	K	8.5	40.2	41.6	K	9.4	44.7	32.7	
9.2	42.0	50.2		8.4	0 11.0	28.5	K	9.3	37.7	47.8		9.5	51.0	51.8		7.5	54.1	47.8	K
9.4	50.6	56.3		9.4	11.0	53.3		8.8	44.6	49.8	K	7.2	20 11.6	23.5	K	9.3	59.5	38.9	
9.0	52.3	25.4	K	8.8	11.9	10.2		8.7	52.3	30.8		8.6	13.9	29.1		8.8	31 3.0	5.5	
9.2	55.4	16.0		9.5	14.2	11.4		9.5	58.7	1.2		8.6	18.8	14.3		9.4	9.6	47.8	
8.2	51 20.9	18.7	K	9.5	25.7	8.1		5.8	10 3.8	56.0	K	9.3	39.5	56.2		9.5	14.1	10.9	
9.5	30.8	48.7		7.8	27.0	38.8	K	9.0	22.4	10.1	K	9.5	52.0	15.0		9.5	21.1	48.3	
9.1	41.2	59.2	K	9.5	33.3	28.0		7.8	44.7	43.7	K	9.4	57.4	20.7		9.5	22.6	50.3	
9.5	54.6	18.0		8.1	38.7	48.7	K	9.3	48.3	38.3		9.1	21 0.4	22.7		8.5	34.4	52.3	K
9.0	55.7	8.9		9.1	42.0	52.3	K	9.2	59.5	53.9		8.8	0.9	34.0		9.4	42.3	12.7	
9.5	52 0.8	38.8		9.5	42.6	23.4		9.3	11 1.7	49.5		8.3	10.0	23.7		8.9	52.5	10.7	
9.4	12.4	13.4		9.4	46.1	11.3		9.3	6.8	40.1		9.4	22 9.1	26.0		9.3	57.0	33.0	
9.4	15.1	38.6		9.5	58.0	43.7		9.5	18.0	46.4		9.5	19.1	6.2		9.5	32 1.5	43.6	
8.8	16.2	8.0	K	9.4	1 17.5	1.2		9.3	21.4	40.7		9.0	27.7	54.4		9.5	9.5	38.2	
3.6	22.0	51.9	K	9.0	39.3	45.7		8.6	48.6	9.8		9.4	32.6	44.1		9.5	12.0	12.9	
9.5	22.1	33.2		9.5	58.2	33.0		9.2	59.6	37.7		9.5	44.4	36.2		9.0	18.5	48.2	K
9.5	23.9	1.1		9.5	59.9	39.9		9.1	12 12.4	49.5		8.8	23 0.3	47.3	K	9.0	18.9	48.7	K
9.4	30.2	47.6		9.5	2 6.9	40.2		9.3	13.2	38.4		9.5	6.2	6.5		8.7	25.0	15.8	
9.5	32.3	29.9	B	9.1	12.9	31.3		9.1	14.6	26.8		9.5	11.4	7.1		9.0	38.1	10.1	
9.5	39.0	56.0		9.4	21.4	30.8		8.6	35.2	48.5		9.3	27.1	56.4		9.3	40.4	22.6	
9.5	43.5	7.3		9.3	23.5	4.8		6.0	38.9	52.7	K	8.8	30.3	41.2	K	8.3	48.5	38.3	
9.5	54.9	48.0		9.3	35.2	44.2		9.5	55.1	49.8		9.5	31.3	35.8		9.5	56.1	10.9	
7.8	53 3.1	20.2	K	9.5	46.4	5.9		9.5	13 14.6	59.5		9.4	52.0	7.0		9.0	56.4	37.6	
9.4	6.5	50.8		9.5	55.0	12.6		9.5	14.7	34.0		9.3	56.4	45.1		9.5	33 1.6	22.8	
9.4	11.9	58.0		9.2	3 4.2	37.7		9.4	16.6	58.5		9.1	24 4.8	35.8		9.5	25.7	52.3	
9.2	40.0	10.6		7.6	9.1	0.9	K	8.7	22.2	0.4	K	9.0	5.5	27.6		9.5	30.8	50.6	
8.0	48.3	28.4	K	9.1	51.9	8.1		8.9	23.0	33.3		8.9	20.0	41.7	K	9.5	36.2	59.6	
9.3	55.1	12.7		7.6	4 7.3	3.9	K	9.5	34.1	22.5		9.0	30.3	19.5		9.5	36.9	53.3	
9.3	54 3.5	45.2		9.0	14.3	55.2	K	9.3	43.2	19.3		9.2	46.0	25.2		9.5	47.8	46.6	
9.4	7.2	14.8		9.2	22.0	21.6		9.5	14 3.3	58.6		9.5	47.8	47.9		8.2	34 14.6	19.9	K
9.5	12.3	0.9		9.3	24.0	11.7		9.5	22.8	45.6		9.2	25 6.3	7.6		9.5	30.0	27.0	
9.4	16.2	18.5		9.3	56.1	33.6		9.5	26.6	31.3		9.0	8.7	0.8		9.5	34.2	17.7	
9.4	35.9	10.6		9.5	5 6.6	42.7		9.4	29.3	25.9		9.3	44.8	55.0		9.5	35 4.6	1.5	

1401—1460				1461—1520				1521—1580				1581—1640				1641—1700			
	5ᵘ		+40°		5ᵘ—6ᵘ		+40°		6ᵘ		+40°		6ᵘ		+40°		6ᵘ		+40°	
m		″	′		m	′	″	′	m	′	″	′	m	′	″	′	m	′	″	′	
9.5	35	6.7	25.3		9.5	46	32.8	15.6	9.3	3	19.2	7.9	7.0	13	27.0	35.1	K	9.2	24	50.6	33.8	
9.5		14.5	52.0		9.5		42.4	32.3	9.5		22.8	35.9	9.0		37.0	17.6		9.2	25	0.8	39.6	
6.6		39.5	26.4	K	9.5		48.5	30.8	9.5		54.8	5.3	7.7		41.3	52.6	K	9.2		5.6	43.0	B
9.5		55.0	16.5		9.1	47	12.2	20.7	9.3	4	12.8	59.0	B 8.3		58.0	29.1	K	9.2		30.2	48.2	
9.2	36	4.6	53.6	K	9.5		35.5	3.3	9.2		15.3	17.5	9.4	14	8.9	44.8		9.5	26	27.8	14.3	
9.3		5.0	54.7		8.1		40.4	46.6	B 9.4		23.3	42.3	9.0		15.0	4.5		9.3		31.0	52.6	
9.5		54.6	7.1		9.5		52.6	1.4	9.1		32.5	50.9	9.3		23.4	43.0		9.3		40.0	57.3	
9.2		55.7	45.7		9.5		56.0	38.1	9.4	5	13.8	17.7	8.6		29.2	26.5	K	9.3		49.9	55.0	B
9.5		57.3	14.5		7.5	48	6.5	45.8	B 9.5		20.4	52.9	8.4		42.7	55.2	K	9.4	27	5.5	29.5	B
9.5	37	13.0	42.8		9.0		13.5	17.8	9.2		21.5	26.6	9.5		49.5	16.9		8.6		8.3	5.9	
9.5		15.1	2.3		9.2		27.8	29.8	9.3		56.7	34.7	9.5		55.1	5.2		9.0		20.7	17.5	
9.3		17.2	13.8		7.6	49	8.4	0.8	9.4		58.9	19.3	9.5		57.3	19.9		9.5		21.8	27.5	
9.4		19.0	8.4		8.8	50	1.0	21.1	9.1	6	4.3	58.0	9.2	15	5.0	56.3		8.2		22.0	45.9	
9.5		21.9	41.1		9.5		1.5	11.0	9.5		8.7	42.3	8.8		23.5	25.7	K	8.0		22.0	41.0	
9.3		27.0	9.8		9.5		27.6	30.5	9.5		13.2	10.5	9.3		23.5	7.9		8.5		36.2	52.6	K
9.1	38	7.5	42.3		9.5	51	2.7	24.1	9.2		33.3	29.8	9.5		44.2	38.0		9.3		44.4	47.9	
9.5		42.1	56.6		9.5		5.2	3.4	9.2		42.5	8.0	9.4		52.5	6,7		9.0		47.0	16.8	
7.9		47.5	6.7	K	8.8		13.0	39.2	K 9.3		43.3	38.8	7.8	16	1.4	0.0	L	9.5	28	2.4	45.3	
8.9		53.3	24.9	B	9.4		45.8	25.5	9.1		46.5	32.3	7.5		13.0	26.4	L	9.4		4.4	46.3	B
9.4	39	12.4	41.7		9.4		49.7	42.8	7.6	7	5.7	56.0	K 9.4		45.6	2.1		9.0		22.0	12.6	
9.5		30.9	4.8		9.5	52	13.6	52.4	9.0		9.3	59.4	K 9.2		48.0	38.0		9.2		23.4	27.4	B
8.3		32.5	54.5	K	9.0		19.8	49.1	9.5		27.8	14.7	9.3		51.1	45.2		9.2		24.3	23.1	
9.5		48.6	6.5		9.2		28.9	54.0	7.5		29.7	21.6	L 7.8	17	1.3	17.3	G	7.0		27.8	27.9	B
7.4	40	5.8	3.1	B	9.0		54.1	59.6	8.4		35.3	25.2	9.2		5.0	50.9		8.9		33.3	27.6	B
8.8		13.5	22.9		9.5	53	0.4	34.4	7.4		37.3	14.0	L 9.5		19.7	40.5		6.1		42.7	1.4	K
8.3		16.4	49.1	K	9.5		16.0	3.8	8.5		44.8	46.4	9.5		20.7	38.0	B	8.8		58.1	35.6	
9.0		41.3	15.3		9.1		42.5	1.7	8.9		50.7	54.3	K 9.5		23.9	34.8		9.4	29	29.2	4.6	
9.1		45.6	49.1		7.5	55	43.4	41.3	9.5		55.2	29.6	9.5	18	4.5	30.7		9.1		37.0	34.9	
9.4		53.4	57.3		9.5		47.0	23.6	B 9.1	8	1.6	30.6	B 9.5		16.6	54.4		9.2		41.2	9.8	B
9.5	41	8.5	3.0		9.5		50.7	55.4	9.5		17.0	45.0	8.3		21.0	8.5	K	8.9		41.5	6.0	K
9.4		38.2	27.2		9.1	56	18.2	33.6	8.7		31.4	0.6	9.0		25.5	22.1		9.4		45.1	39.3	
9.5		39.7	13.8		9.5		31.4	22.7	8.5		31.5	14.3	K 9.5		42.6	23.3		9.4		47.7	50.7	
7.8		56.5	55.2	K	9.0		35.0	9.9	8.6		43.0	34.3	K 7.3		46.0	12.5	K	9.5		59.0	54.4	
9.2		58.3	39.1		9.2		47.7	42.3	9.5		43.3	33.0	9.4	19	10.4	39.7		9.2	30	21.7	13.9	
8.5	42	21.2	6.5	S	9.1	57	19.0	12.4	8.9		46.8	55.0	K 9.5		24.0	49.6		9.5		31.1	25.5	
9.4		21.8	2.8		9.5		22.3	18.3	9.0		56.2	47.2	9.5		52.0	20.0		7.4		36.0	17.9	K
8.8		28.5	56.6	K	9.3		50.6	12.1	9.3	9	18.3	24.4	9.5		52.0	31.8		9.4		40.0	44.5	
9.3		29.0	5.7		9.3	58	3.0	50.2	8.0		23.7	42.1	9.4	20	0.9	20.0		8.8		40.6	14.4	K
9.4		34.2	8.2		9.4		27.0	33.6	9.4		27.7	56.0	9.4		44.4	10.6		8.7	31	8.0	22.0	K
9.2		44.9	23.5		9.5		29.0	32.4	9.5		43.5	37.2	9.1	21	35.0	18.3	K	9.5		24.6	10.0	B
8.5		52.5	53.5	K	9.4		35.2	3.5	8.7		51.2	27.1	9.2		41.0	17.3		9.2		33.0	30.4	
9.4		59.8	37.3		9.5		53.7	14.3	9.5	10	0.1	57.3	9.5		41.6	25.0		8.7		57.3	24.5	K
8.4	43	6.9	40.8		8.4	59	31.0	32.1	K 9.5		7.3	37.4	8.8		53.0	30.4	K	9.2	32	10.4	34.6	
9.5		12.5	16.6		9.5	0	4.3	34.8	9.5		24.3	36.3	8.9		58.1	31.9	K	8.8		13.5	44.3	
8.9		23.5	8.9		9.5		16.8	25.6	9.1		25.5	22.7	K 9.0	22	10.4	0.0		8.5		31.2	2.3	
8.1		24.0	22.8	B	7.7		26.3	35.8	K 9.0		41.8	21.5	K 9.5		14.4	1.4		9.2		47.0	40.6	
9.2		49.5	39.4		9.5		46.2	13.1	9.5		48.7	49.6	9.3		27.5	4.9		8.1		47.1	14.6	B
9.5		50.4	50.9		7.9		54.2	33.3	K 9.5		58.5	37.6	9.0		41.1	42.2	K	9.4	33	11.4	18.9	
7.8		56.8	21.0	B	9.5	1	44.0	33.9	9.4	11	1.2	47.0	9.0		45.0	15.8		8.9		11.9	8.9	
9.5	44	11.5	25.6		9.2		44.7	14.3	9.5		35.2	40.2	8.8		46.4	6.4		8.4		18.8	6.1	
9.5		12.7	42.5		9.4		48.8	24.7	9.4		37.8	48.6	8.5	23	14.0	25.2		9.5		29.1	33.1	
9.4		46.7	32.7		8.8	2	23.3	14.0	K 8.5		45.5	56.4	K 9.5		23.7	52.7		9.5		31.2	1.8	
9.5	45	3.5	40.9		8.4		36.5	54.1	9.5		52.8	40.9	9.0		25.0	57.6	K	9.5		32.5	9.9	
8.0		13.4	34.2	B	9.3		42.7	53.9	9.5	12	10.5	52.8	9.5		33.6	38.7		9.5		36.6	29.7	
9.5		23.6	2.1		9.1		45.8	11.5	9.5		11.2	39.7	9.0		42.0	39.9	K	9.5		42.8	20.1	
8.6		46.5	47.3		9.0		46.7	38.9	8.0		12.5	34.1	K 9.4		43.8	47.8		7.0	34	8.5	45.8	K
8.4		47.5	26.3	K	9.0		53.3	33.4	K 8.4		21.0	6.7	9.3	24	0.1	55.5		9.0		10.0	45.3	
9.5	46	6.0	43.0		8.8		54.5	48.1	9.5	13	5.0	59.8	8.4		41.0	9.8		9.2		38.8	19.0	
9.4		12.5	44.5	B	9.5	3	17.3	10.1	9.4		6.8	13.3	9.5		47.1	48.6		9.4		44.9	18.0	
9.4		23.0	23.3		9.4		17.9	1.5	9.5		22.0	13.8	9.3		47.8	43.0		9.4	35	8.1	38.5	

+40°

1701—1760				1761—1820				1821—1880				1881—1940				1941—2000			
	6ᵐ	+40°			6ᵐ—7ᵐ	+40°			7ᵐ	+40°			7ᵐ	+40°			7ᵐ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.0	35 42.0	55.4		9.0	47 36.1	37.4		9.5	6 30.6	29.7		8.0	22 56.5	8.8	B	9.5	38 16.2	35.0	
9.5	45.0	10.8		8.7	55.1	13.2	K	9.4	48.7	16.1		9.2	23 17.9	0.7		9.2	19.6	24.9	
9.5	36 4.5	6.6		9.2	57.9	17.7	B	8.3	50.4	15.0	B	9.5	20.1	59.1		9.2	21.5	58.8	
8.7	23.3	25.3	B	9.3	48 12.6	36.9		9.2	7 13.8	17.1		9.4	25.0	35.1	B	9.5	39 4.2	2.3	
8.8	28.2	41.7		9.5	29.1	22.5		9.5	24.9	6.1		9.2	27.2	10.6		9.4	18.5	8.3	
8.8	39.3	32.3		9.3	49 26.6	14.6		9.1	29.4	26.4		9.2	37.3	7.5		9.5	39.0	58.6	
7.6	39.7	23.0	B	9.1	37.2	37.4		9.0	46.1	23.4		9.2	40.9	26.1		9.5	47.1	2.4	
9.1	51.4	29.9		8.8	44.6	5.7		9.3	52.4	19.2		9.5	24 12.3	7.0		9.5	40 4.6	26.9	B
9.4	53.4	14.1		9.0	50 29.4	9.6		9.1	55.4	50.2		9.2	21.5	21.8		7.0	22.9	7.9	K
8.6	37 4.0	54.7	K	7.3	36.6	33.4	K	9.4	8 12.6	51.8		9.5	34.9	2.4		9.5	53.0	7.5	
9.5	4.9	59.4		8.0	51 4.1	13.2	K	9.4	30.1	51.3		9.4	25 5.1	13.9		8.9	41 45.1	40.7	
9.4	7.5	10.4		9.4	10.5	40.8		9.5	9 24.3	6.5	B	7.3	17.5	48.8	K	9.3	42 11.5	38.0	
9.5	26.8	46.7		9.4	12.6	24.0		8.9	24.4	18.2	K	9.3	22.0	31.7		9.0	56.9	38.3	
9.4	29.5	19.5		8.5	16.0	52.0	K	9.4	35.8	18.8	B	8.4	24.1	1.0		8.7	43 0.5	32.0	
9.4	38 13.0	50.0		9.3	27.1	15.0		8.6	52.0	58.8	K	9.4	25.2	0.0		9.2	25.7	9.5	
9.5	32.2	59.1		9.0	35.2	1.6		8.6	55.7	58.3	K	8.5	29.1	30.4		8.6	29.0	3.2	
7.8	34.0	52.8	K	9.5	52 35.3	20.0		8.2	10 14.0	10.3	L	9.5	32.1	0.0		9.4	44 16.1	58.0	
9.5	42.2	46.3		8.7	37.2	8.0	R	8.8	33.8	56.5	K	9.3	42.6	57.8		8.0	45 10.6	4.2	K
8.4	42.8	44.8	B	9.2	51.9	57.5		9.5	11 22.3	7.0		9.4	26 23.9	4.4		9.4	21.4	0.5	
9.5	57.3	14.3		9.1	53 14.1	0.1		9.4	33.3	7.5	B	8.9	33.2	27.4	K	9.2	27.9	14.9	
8.7	39 13.0	46.1		8.4	22.5	24.5		8.9	42.6	38.7		9.5	43.5	24.9		8.3	28.7	44.3	K
8.9	19.5	55.2		9.5	41.6	56.8		8.2	12 0.3	13.7	B	8.7	27 11.8	4.1		9.3	35.5	10.2	
7.3	27.0	20.4	L	7.0	53.7	47.9	K	8.4	4.2	47.6	B	6.8	22.2	20.5	G	8.8	38.1	35.9	
9.2	32.1	27.1		9.5	54 24.3	31.3		9.3	14.0	29.3	B	8.8	32.6	23.0		7.8	47.4	40.6	K
9.3	34.9	35.7		9.4	53.7	22.4		9.3	24.9	3.4		9.4	48.7	19.9		8.9	46 14.1	50.8	K
9.3	39.3	39.2		9.3	55.2	35.3		9.3	37.7	20.5		9.2	28 7.2	15.2		9.4	47 25.7	41.1	
9.5	46.9	6.8		8.5	55 27.5	32.8	K	9.4	39.5	1.6		9.2	8.0	17.9		9.2	36.2	40.6	B
9.5	59.8	36.4		8.7	55.8	4.6	K	9.2	45.8	12.5		9.3	47.8	0.3		9.5	38.9	49.3	
7.2	40 7.0	6.5	L	9.3	56 4.8	36.2		9.0	13 4.4	55.6	K	9.5	49.0	32.1	B	9.2	47.7	24.4	
9.5	12.1	22.3		9.3	34.7	22.8		8.1	6.4	58.2	K	9.5	29 2.2	23.1		9.2	48 21.5	48.5	
8.4	23.6	54.6		8.8	49.8	24.8	K	9.5	59.5	38.0		7.3	27.5	59.1	K	9.3	49 10.5	1.9	B
7.5	57.8	32.9	B	8.8	51.3	28.3	K	5.8	14 6.4	57.2	K	9.5	33.2	2.0		9.5	57.1	2.4	
8.5	41 5.3	10.5		8.8	57 10.0	59.7	K	9.5	19.3	1.2		9.4	40.4	0.5	B	9.4	50 3.9	45.8	
8.5	5.6	39.9		9.5	26.5	10.4		9.3	33.0	20.5		9.5	50.1	13.0		9.1	9.8	14.4	
8.3	23.8	18.0		8.5	35.4	41.3		9.5	15 4.6	55.3		8.9	30 23.1	30.0		9.4	27.1	16.5	
9.3	54.9	16.0		9.1	46.5	29.7	K	9.5	8.5	14.0		8.8	27.6	7.2	K	9.5	35.6	36.9	
8.9	55.1	9.5		8.5	58 3.0	4.2		9.5	13.1	27.9		9.5	31.9	10.5		9.3	51 4.5	1.0	
8.4	58.9	35.4		8.9	51.5	13.8		9.2	15.2	4.9	R	9.1	35.2	6.3	K	7.5	7.3	18.0	L
7.3	42 33.0	5.6	K	9.3	0 11.3	25.1		9.4	16 1.4	13.2		9.5	37.6	57.3		8.1	29.4	47.7	B
8.9	33.9	2.3	B	9.1	42.2	16.5	K	9.4	12.8	54.7		9.5	46.1	56.8		9.2	33.1	50.2	B
9.5	44.6	25.0		9.5	47.2	38.8		9.3	17 15.8	5.6		9.2	46.8	26.6		9.5	41.9	22.7	B
9.2	50.1	47.4		9.3	57.6	35.1	B	9.3	26.1	35.1	B	9.0	53.1	31.3		9.0	48.6	14.8	
9.5	43 15.3	21.5		7.7	1 9.4	17.1	K	8.9	50.8	4.2	K	9.0	54.4	20.0		8.7	53.6	1.9	K
9.0	19.8	34.4	K	9.4	55.1	7.0		7.4	18 7.5	56.7	B	9.5	59.4	36.8		7.5	57.2	33.3	K
9.0	28.1	0.3		8.5	2 12.0	10.5	K	9.4	13.5	1.5		9.1	31 30.2	8.2		9.5	52 49.1	37.6	
9.3	35.0	24.0		9.4	12.3	38.3		9.4	26.4	58.5		9.5	47.7	26.4		9.3	53 15.1	39.3	B
9.3	44 21.1	19.0		8.2	25.7	14.9	K	9.5	46.6	16.7		9.5	49.9	39.3		9.2	36.1	33.9	K
9.5	22.2	28.2		9.5	3 1.6	52.3		9.5	19 21.6	34.5		9.5	53.3	13.9		9.5	54 21.2	57.8	
9.5	47.9	26.3		9.5	12.1	12.9		9.2	23.5	18.8		9.3	32 9.0	47.4		6.8	55.2	8.9	G
9.3	59.1	7.5		9.5	32.5	32.8		9.3	20 2.0	23.5		9.1	15.5	50.1	K	9.0	55 29.1	41.3	
8.3	45 14.1	47.4		9.5	45.6	24.8		8.7	7.6	0.0	K	9.2	21.4	57.2		9.4	47.6	16.0	
8.0	23.0	17.1	R	9.2	47.0	48.0		9.5	8.4	44.8		9.4	33.3	28.4		9.5	56 5.7	11.5	
7.5	26.6	44.4	L	9.2	52.8	51.0		9.0	8.9	25.4		9.4	33 20.6	20.8		9.4	57 24.6	1.5	
9.5	34.4	29.0		8.9	4 9.6	6.0		9.1	29.1	49.2		9.4	34 12.5	15.0		8.8	50.5	4.3	K
8.5	51.8	56.4	K	9.3	13.6	38.3		8.8	40.1	56.5		9.5	47.7	20.1		8.3	53.4	15.4	L
9.3	54.4	51.4		9.4	18.0	31.0		8.7	55.7	45.3		9.1	35 1.5	46.8		9.3	58 22.0	12.1	
7.0	46 6.6	43.9	L	9.3	41.7	14.5		9.5	56.0	23.8		9.4	37.9	45.9		9.1	38.1	58.0	B
8.3	19.6	16.0	R	9.0	5 24.7	30.0	K	8.4	21 3.1	39.3	K	9.5	37 45.4	49.5		9.1	41.0	11.3	B
9.1	29.1	15.5		9.5	51.6	41.9		8.6	22 0.6	45.1	K	9.2	55.9	11.6		8.7	41.1	21.5	K
8.5	58.2	2.5	K	9.4	6 12.8	29.4		9.4	53.2	40.7		9.5	58.6	50.3	B	9.5	59 15.0	6.0	

2001—2060					2061—2120					2121—2180					2181—2240					2241—2300				
	7ᵘ—8ᵘ		+40°			8ᵘ		+40°			8ᵘ—9ᵘ		+40°			9ᵘ		+40°			9ᵘ—10ᵘ		+40°	
m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	59	32.6	3.3		9.1	20	1.3	30.5		9.5	46	2.2	7.5		9.3	8	0.0	23.2		5.8	33	1.7	24.9	G
9.5	0	1.4	5.6		9.2		33.9	50.3	K	9.5		8.1	10.2		9.5		6.8	49.3		9.5		9.2	55.4	
9.3		17.0	13.5	B	9.5		44.3	33.8		8.1		11.0	35.6	K	9.1		15.1	15.0	K	9.5		25.0	18.2	
9.1		36.0	23.5	K	9.2	21	24.2	15.3		9.3		22.4	57.9		8.1		53.6	46.4	K	9.5		27.5	13.3	
9.5	1	50.5	20.0		7.2		28.6	32.1	K	6.0	47	4.6	45.3	K	9.5	9	26.9	11.2	B	9.0		42.8	57.0	
9.1	2	2.0	56.3	K	6.8		34.3	42.4	K	9.4	48	39.1	12.5		9.0		31.4	36.4		9.4		46.3	19.4	
9.1		20.0	27.5		9.5		42.0	50.8		8.9		50.6	43.1	K	9.1		34.5	47.8	B	9.4		58.4	26.3	
9.5		33.2	7.6	B	9.5		44.0	42.3		9.5		57.2	6.1		9.5	10	15.1	13.5		8.7	34	57.2	4.7	
9.0	3	11.1	47.8		9.5	22	21.7	18.9		9.5	49	5.0	4.6		9.1		28.9	44.9	K	8.8	35	26.5	35.0	
8.2		27.7	25.0	B	9.5		43.5	19.9		9.5	50	6.2	9.1		8.2		55.2	8.6	K	9.5		28.9	4.3	
9.4		47.4	58.7	B	8.8	23	56.3	23.6	K	9.5		6.6	13.5		9.5	11	12.4	47.9		9.0	36	37.4	39.5	
9.5		55.9	52.7		9.0	24	1.5	26.2	K	9.5	51	28.6	15.3	B	9.3		13.1	22.1		9.1		40.8	24.1	
9.3	5	17.0	18.5		9.5		59.1	56.6		9.1		34.0	53.9	B	8.5		54.0	26.2	K	7.3	37	6.4	29.1	K
8.8	6	14.5	58.8	K	9.4	25	8.0	11.5		9.2		38.7	38.0		6.8	12	6.8	16.1	K	8.4		7.2	32.1	K
8.0		28.9	46.9	K	9.1		17.5	34.7		9.3		47.8	31.0		6.8		12.1	54.3	K	9.5		34.6	45.5	
9.4	7	15.3	14.2		7.4	27	8.0	15.2	K	9.3		56.5	47.3		9.3		53.6	35.0		8.7		44.4	27.0	K
9.5		27.9	50.0		9.5		20.7	31.8		9.1	52	10.1	11.0		7.5	13	20.1	50.9	K	9.5	38	4.9	18.5	
8.9	8	11.0	42.0	K	9.5		31.0	27.6		6.5		19.0	16.4	K	9.5		43.6	45.9		9.2		40.6	29.9	
9.4		18.7	17.6	B	9.3		32.9	42.9		9.5	53	11.9	23.4		8.6		50.8	18.2	K	8.8		50.7	55.7	L
9.2		27.2	49.6	K	9.4		34.6	32.8	B	9.4		54.5	47.8		9.1	14	43.2	47.4		8.8	39	11.9	15.2	K
9.5		31.7	5.4		9.0		47.4	39.4		9.3	54	1.7	34.7		9.0		45.4	29.9		7.0	41	20.4	17.4	K
8.2	9	5.4	10.5	B	9.0	28	2.2	18.0	K	9.4		11.9	27.0		8.8	15	45.0	19.0		9.5		28.6	10.1	
8.8		12.5	52.2	K	7.5		24.4	8.0	L	9.4		31.6	43.0		8.0	16	26.8	18.5	K	9.5	42	12.4	16.4	
9.4		43.4	18.8		8.9		30.0	50.9	K	9.5		36.1	14.9		9.5		55.1	42.9		8.4		20.0	52.2	K
9.5		45.0	15.6		9.1	29	38.3	31.5	B	9.3		52.6	41.8		9.0	17	19.6	54.8		9.5		43.9	31.8	B
7.6		50.8	3.2	K	8.7		43.1	48.7	K	8.5	55	1.4	56.1	K	9.5		59.1	19.0		7.5		52.9	16.9	K
7.1	10	16.5	19.9	L	8.7		43.5	0.8		8.6		49.2	6.2		9.3	18	10.1	22.5		9.2	43	26.5	14.2	
8.9		34.4	55.9	K	9.5	30	13.4	33.3		8.7		49.8	29.2		9.2		17.9	8.1		9.4		47.7	52.0	
9.2		45.4	17.9		9.5		29.7	3.9		8.8	56	2.5	47.0		9.2		38.6	56.8		9.0		55.9	22.0	
8.7	11	29.6	48.3	K	8.0		50.0	49.7	K	9.5		12.3	58.8		9.4	19	14.2	29.1		9.0	44	14.0	0.9	B
8.5		49.3	39.8		7.3	31	17.2	32.4	G	8.7		13.1	42.5		9.2		14.4	32.6	B	9.5		14.6	12.4	
8.8		54.8	8.2		9.1	32	30.2	4.8		8.9		21.9	27.1		7.9		26.1	36.0	K	9.5	47	26.7	24.9	
9.2	12	15.7	49.6	K	9.5		56.9	34.4		9.4		25.5	48.1		8.8		34.7	42.0		9.5		45.4	5.9	
9.5		41.1	22.8		9.5	33	9.2	16.2		9.2		30.9	26.6		9.0	20	32.4	29.9		9.3	48	42.6	1.9	
9.4		50.8	41.4		9.5		28.1	12.6		9.5		55.2	8.8		9.3	22	10.6	23.0		9.5	49	14.0	59.6	
8.5		55.0	50.4	K	8.6		29.7	43.7	K	9.4	57	10.8	27.6		9.5		31.3	9.0		9.3		19.4	39.3	
7.2		58.4	54.3	K	8.3	34	56.4	22.9	K	9.2		44.0	18.0		9.2		45.0	37.4	B	9.4	50	9.5	26.8	
9.2	13	12.6	33.0	B	9.3	35	6.1	58.6	B	9.0		55.6	27.5		8.1	23	5.2	39.2	K	8.4		55.2	56.9	K
9.5		22.3	34.5		9.5		13.2	35.5		9.5	59	9.3	48.6		9.5		36.5	5.3		9.3	52	5.4	4.2	
9.3		57.2	39.4		8.6		21.5	53.3	K	9.0		14.4	28.7	K	9.5	24	52.0	3.0		9.2		8.0	6.5	
9.0	14	0.0	3.3		9.5		38.2	21.6		9.5		43.6	42.4		9.5		53.5	43.0		9.5		22.5	28.4	
9.2		1.8	58.6	K	9.2		51.1	58.6	K	9.3		46.8	32.0		9.5	25	3.1	52.4		9.0	55	54.9	22.4	
8.8	15	8.3	22.6		9.4	36	38.4	29.0		9.4	0	21.7	6.4		9.1		45.4	34.0		9.5	56	12.4	45.3	
9.2		25.1	46.0		8.8		39.5	3.3		7.8		29.8	45.4	K	4.7	26	2.8	15.6	K	9.3		43.8	28.3	
9.5		25.5	11.6		9.3	37	11.2	34.1		9.5	1	20.5	58.8		8.5		9.7	38.5	K	8.3		57.0	34.2	
9.5		33.6	51.6		9.4		46.5	49.0		9.5		32.1	51.8		6.8		20.3	36.3	K	6.8	57	11.5	17.3	K
8.8		36.0	4.2	K	9.4		47.6	14.1		7.5		36.6	23.5	K	9.3		21.5	45.5		9.2		16.9	53.2	
8.8		59.5	18.9		8.8		51.3	33.1		7.5	2	2.6	53.3	K	9.5	27	26.1	28.1		7.3		46.5	13.4	K
9.0	16	54.2	14.6		7.6	38	33.7	7.3	K	9.0		12.7	19.9	B	9.5		32.0	35.0		8.8	58	19.0	39.3	
7.5	17	8.0	21.7	K	9.5	39	16.6	53.9		9.0		15.0	9.1		9.5	28	15.5	51.4		9.0	59	57.5	38.8	
8.8		8.7	25.9	K	8.2	40	32.3	7.7	K	9.5		51.5	48.0		8.8	29	11.8	12.6	K	8.3	1	46.5	13.0	
9.2		18.0	57.4		9.5		45.5	5.4		8.5	3	28.6	35.4		5.5		19.1	53.7	K	9.5		50.8	49.3	
9.3		36.1	6.3		9.5	41	13.1	45.9		7.8		36.6	58.9	K	9.5	30	6.6	23.5		8.3		59.2	38.2	
9.1		58.0	46.9	K	9.3		15.0	33.4		9.2	5	6.3	50.9	K	9.5		20.8	51.4		9.5		59.2	17.0	
8.8	18	9.3	18.3	K	9.1	42	43.4	35.4		8.1		27.4	19.0	K	9.3	31	41.3	40.0		8.0	2	8.3	4.9	K
9.3		19.8	28.2		9.5	43	14.7	35.1		9.5	6	8.6	4.2		9.0		47.2	43.5	K	9.5		36.0	55.5	
9.4		22.8	59.1		8.1		33.5	50.2	K	9.0		21.3	19.0		9.5		48.0	8.7		8.9		54.5	54.7	K
8.3	19	8.3	24.5	K	9.3	44	24.4	52.9		9.3		31.0	44.0		9.5		48.8	19.2	B	9.3	3	18.8	6.2	
9.0		10.7	32.7		7.1	45	2.6	40.8	K	9.3		38.4	51.4		9.4	32	4.5	23.4		8.6		18.9	54.6	K
9.5		42.2	2.6		9.5		46.7	38.6		8.5		42.6	59.8	K	8.5		37.1	54.0	K	9.0		33.5	47.7	K

2301—2360				2361—2420				2421—2480				2481—2540				2541—2600			
	10ᵘ		+40°		10ᵘ—11ᵘ		+40°		11ᵘ		+40°		11ᵘ—12ᵘ		+40°		12ᵘ		+40°	
m					m				m				m				m			
8.8	4	13.4	5.5		8.3	34	57.6	57.4	K	6.5	14	47.9	58.9	K	9.5	49	30.4	25.9		9.4	22	53.2	38.0	B
9.5		19.8	45.2		9.3	35	19.7	0.7		8.8	15	16.4	59.9	K	9.1		32.4	11.0	K	7.2	23	8.4	4.1	K
9.2		23.6	51.3		8.1		54.3	39.6	K	9.5		30.2	2.7	B	9.5	50	18.9	2.5		6.8		58.7	23.2	K
9.0		49.6	12.4	K	9.2	36	19.2	11.1		9.3		37.0	24.1	B	9.1		34.4	29.9		9.5	24	18.2	28.7	
8.0	5	4.6	3.0	K	8.6		49.4	21.0		9.5	17	11.5	3.7		7.9	51	6.4	59.6	K	9.0	25	31.2	19.3	K
9.1		51.0	8.2	K	8.0	37	48.1	14.9	K	9.4		18.9	25.1		9.1		59.0	57.3		9.5		40.2	43.7	
9.4		56.0	20.9		9.3		55.6	42.0		9.2	18	14.8	58.5	K	9.5	52	10.6	54.3	B	9.0		47.5	19.2	K
9.4	6	15.4	58.2		9.5	38	2.9	49.0		9.1		32.4	11.0		8.5		10.9	47.3	K	8.3	26	31.3	5.5	B
9.5		28.5	13.4		9.5	39	18.6	13.4		9.5		49.2	21.6		8.9	53	1.4	14.0	K	9.5	27	32.2	49.1	
9.0	7	39.8	27.8		9.5		36.8	44.4		9.5	19	46.0	56.6		8.3	54	12.4	23.0	K	9.4	28	39.2	34.6	
8.4		44.2	46.7	K	6.9		42.9	30.8	K	9.3	20	45.4	18.2		9.0		44.9	21.4	K	7.0		44.8	29.0	K
9.5	8	8.8	31.8		9.5	40	0.9	42.9		8.1		45.9	6.3	K	9.4		48.5	41.5		8.5	29	13.4	19.1	K
7.8	10	10.3	2.4	L	8.3		9.5	22.0	K	5.0	21	16.5	8.2	K	9.2		53.0	19.6		8.5		27.2	4.6	K
9.4	12	5.7	27.3		8.8	41	20.7	35.0	K	9.4		42.0	24.4		8.9	55	51.0	17.0	K	9.0		49.2	33.7	
9.5		14.3	53.2		9.4	43	16.5	26.4	B	9.2	23	41.4	18.1	B	9.5		58.5	22.7	B	8.6	30	20.3	53.5	
9.1		34.2	14.4		9.0		39.7	52.4	K	8.2		43.7	54.2	K	9.1	57	55.8	58.6		9.1		31.3	8.0	B
9.5	13	0.3	20.4		9.3	44	0.6	5.1		9.5	24	25.7	25.3		9.4	58	31.0	39.8		8.2	31	12.5	46.1	K
9.5		21.6	10.8	B	7.0		27.6	56.4	K	9.4	25	12.6	24.0	B	9.1	0	3.4	2.1	K	7.5		48.9	5.8	K
9.5		30.0	10.9	B	9.4	45	14.4	27.0		8.2		16.8	7.1	K	9.5		19.0	59.0		8.8		54.4	54.9	K
9.4		49.7	38.8		9.5		40.8	13.8		9.5		26.2	22.0		8.4		34.9	48.2	K	9.2	32	57.3	17.0	K
8.5	14	8.6	39.4	K	9.3		51.6	17.3	B	9.1	27	43.9	41.4	K	6.8		45.7	28.3	K	9.3		59.2	0.3	B
9.0	15	58.3	52.9		9.0	46	22.4	52.5		9.4	28	51.5	1.5		9.5	1	4.4	4.8		9.4	33	24.7	2.8	
9.1	16	25.0	5.4		9.5		28.6	23.1		9.5	29	42.0	2.5		8.9		38.4	40.9	K	9.4		32.0	13.3	B
9.0		30.1	38.1		7.5		43.4	35.0	K	8.9		59.9	56.7	K	9.5		40.6	59.3		9.5	34	18.8	12.7	
9.5		43.7	11.6		8.0	48	32.9	35.0	K	9.2	30	20.8	21.4		8.0	2	32.7	14.5	B	9.4	36	2.0	56.0	
9.5	17	10.7	54.9		9.1		36.6	45.0		9.4		31.8	44.8		8.8		43.4	25.9		8.6		26.7	25.7	K
7.5		31.5	0.4	K	8.2		41.2	29.2	K	9.5	31	57.4	45.2		9.0	3	23.0	7.5		8.9	37	27.2	55.0	K
9.4	18	46.4	55.4		9.5	49	2.4	59.8		9.5	32	5.3	5.1		7.1		27.3	41.9	B	9.3		33.2	23.7	
8.2	19	4.3	4.4	L	9.4	50	14.6	58.5		9.4		38.0	35.4		9.0	5	22.5	51.6	K	9.5		43.0	40.6	
9.3		29.8	3.7		9.4		15.3	55.1		9.2	33	10.1	52.7	K	9.3		23.5	8.0		6.1	38	7.7	4.0	K
9.0		46.8	57.4	K	9.1		48.6	1.0		8.4	34	32.9	28.8	K	9.1		24.9	11.9	K	8.3		41.8	34.8	K
9.5	20	20.9	8.2		9.5	51	59.5	30.0		9.3		44.1	12.6	B	8.0	6	38.9	47.3	K	8.9	40	12.4	29.3	K
9.1		27.2	32.2	B	9.1	54	37.1	51.7	K	9.0		46.4	23.9	K	6.5	7	19.0	8.6	K	9.4		57.6	6.6	
9.3		43.7	29.4		9.5	56	4.7	0.2		9.4		55.1	28.9		8.5	8	10.4	54.8	K	9.3	41	30.3	3.2	
8.5		56.6	30.5		9.3		10.4	53.8	K	9.2	35	0.0	0.4	K	9.0	9	2.4	5.9	K	9.1		47.2	7.0	
8.9	21	11.9	24.0		9.4	57	23.4	13.5		9.4		53.4	52.2		7.2		26.6	23.0	K	9.3	42	31.9	19.3	
8.9		13.4	6.4	B	9.5		41.2	6.3		8.6	36	19.9	51.7	K	8.5		34.3	21.4	K	9.3		33.2	37.8	
8.5		43.8	43.4		8.0	58	2.2	35.4	L	9.5		25.3	3.8		8.9		54.7	39.1		7.7	43	0.1	38.3	B
9.0	22	4.9	15.5	B	9.1		42.3	0.1		8.6		46.5	17.0		9.2	10	27.2	22.7	K	8.8		14.9	41.0	K
9.3	23	1.5	4.4		9.2		58.1	51.5	K	9.4	37	58.9	1.8		8.8	11	1.0	46.0	K	9.3		21.1	59.5	
8.8	24	2.4	20.7	K	9.2	59	41.5	34.6		8.0	38	21.6	12.5	K	8.7		8.9	36.0	K	9.5	44	15.3	54.5	B
9.5		19.5	23.1		9.2	0	3.5	19.2		9.0		22.7	51.7	K	9.5		23.7	50.0		9.0		19.0	52.2	B
9.5		28.4	56.2	B	9.5	1	31.4	45.0		8.4		31.4	13.5	K	9.1		28.8	59.5		9.5		48.4	12.9	
9.3		36.5	2.5		9.5	2	31.7	9.2		9.3		37.6	8.1		8.0	12	12.1	25.8	B	9.5	45	12.1	59.2	
9.5	25	13.8	4.7		9.3	4	10.4	26.6		9.1	39	6.8	53.2		9.4		32.1	3.4		9.1		58.4	36.7	K
9.4		31.9	3.9	B	9.3		45.6	8.6	B	9.0		23.4	21.5		8.8	13	56.9	19.0	B	9.5	46	9.0	52.7	
9.5	26	23.8	55.9		9.4	5	1.7	57.9	S	7.8		51.9	44.2	K	9.4	14	18.9	11.8		9.5		29.9	9.4	
9.4	27	35.8	54.8	B	7.8		58.1	46.0	K	9.1	41	6.0	25.4	K	9.4		33.6	12.1	B	9.5	47	53.1	5.6	
9.4	30	30.4	49.4		8.2	7	45.8	29.1	K	9.5		27.6	6.0		8.0	15	39.7	4.9	K	9.1		54.1	10.4	B
9.3		42.9	2.3		9.5	8	21.3	40.5		9.1	42	24.2	6.8		8.3	16	17.6	36.1	K	8.3	48	3.7	29.8	K
9.3		44.8	57.8		9.2		21.4	23.6	K	9.4		41.4	37.3		9.3		28.5	43.3		9.3		15.9	25.7	B
9.3	31	8.4	21.0		9.0		55.0	40.0		8.1	45	5.8	56.2	K	9.2		53.2	24.7		9.1		16.3	2.7	
9.3		25.6	35.0		9.0	9	34.4	17.2	K	9.5		28.0	56.5		8.5		55.8	40.1	K	9.5		47.4	26.6	
8.0		27.1	9.3	K	9.4	10	50.9	43.5		8.0	46	25.6	25.1	B	9.4	17	24.7	32.5		9.5	49	7.1	6.5	
8.5		51.9	52.4	K	9.2	11	54.4	51.4	K	9.0	47	11.4	4.1		9.0	18	9.9	52.5	K	9.4		20.5	5.4	
9.3	32	41.3	10.7	B	9.5	12	18.9	50.0		9.3		43.0	31.5	K	9.0		11.4	2.5		8.3		26.7	31.8	K
9.5		44.7	4.4	B	9.4		21.4	36.0		9.1		59.2	37.0	B	8.0		54.2	41.6	K	9.5	50	42.7	47.3	B
9.2	33	4.7	21.4	B	9.5	13	28.5	25.0		9.5	48	36.6	6.3		8.3	19	15.7	42.1	K	6.8	52	12.0	37.4	G
9.4		17.2	57.5		9.1		34.9	36.6	K	9.2		54.4	3.5		9.5	21	38.7	8.8		9.3		25.9	50.3	
9.0		55.3	3.6	K	9.1	14	3.4	43.0	K	9.5	49	25.0	16.0		9.0	22	32.2	24.2	K	9.5		30.7	5.6	

2601—2660				2661—2720				2721—2780				2781—2840				2841—2900			
	12ᵘ—13ᵘ	+40°			13ᵘ	+40°			13ᵘ—14ᵘ	+40°			14ᵘ	+40°			14ᵘ—15ᵘ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.5	52 45.0	38.8	K	9.5	24 39.8	40.5		8.9	56 18.0	52.7	K	8.3	21 38.3	48.6	K	8.7	57 21.7	44.9	
9.1	53 32.1	46.9	B	8.6	25 49.0	53.8	K	8.8	52.3	7.5	K	9.5	47.9	54.3		9.0	58 36.8	11.8	
9.3	33.3	49.9		7.6	26 8.0	2.2	L	8.0	57 5.3	47.8	K	9.4	22 36.9	15.8		9.2	39.3	31.3	
8.8	50.5	12.4		9.2	24.1	48.4	K	8.5	26.2	21.4	K	9.3	51.9	51.6		9.2	50.5	38.2	
9.1	51.0	29.3		7.9	40.7	6.5	L	9.5	58 32.8	20.9		7.3	23 6.9	15.8	K	9.1	59 13.7	6.1	
9.3	54 10.3	17.4		7.4	27 7.0	40.5	K	8.8	59 21.1	59.5	K	8.7	8.9	54.8	K	9.5	22.9	54.0	
9.3	28.2	37.3		9.3	28 55.2	34.4		9.5	32.7	46.2		9.2	26.8	50.6	K	9.5	47.1	20.4	
8.6	41.0	50.2	K	9.4	29 22.5	19.5		8.2	44.6	40.3	K	9.4	39.7	46.6		8.5	51.3	31.0	
9.3	55 1.6	6.5		9.5	30 33.0	41.4		9.5	0 24.1	4.1		9.5	44.6	2.4		8.9	0 4.5	36.7	
9.5	42.2	45.8		9.5	31 8.2	7.5		9.1	41.6	42.7	K	8.8	48.2	26.4	K	9.3	23.2	11.8	B
9.3	56 8.0	14.5		9.5	32 26.9	26.5		9.5	1 59.8	8.8		9.4	25 7.8	11.3		9.5	33.2	35.6	
9.5	23.7	41.3		9.0	34.6	19.5	K	9.4	2 6.8	37.2		8.2	25.1	20.4	K	9.0	41.3	13.2	K
9.4	36.5	25.1	B	9.0	41.9	15.5	B	9.5	11.9	39.4		7.8	29.4	33.3	K	9.5	46.8	47.5	
9.5	57 3.0	33.3		8.6	33 18.3	49.4	K	9.5	16.9	40.1		8.9	26 0.7	44.9	K	8.7	1 26.0	9.9	K
9.5	14.5	53.5	B	9.1	35.9	49.9	K	9.5	49.0	55.3		9.3	59.4	32.6		7.8	43.7	40.5	K
8.6	25.7	38.2	B	9.5	46.8	56.3		8.8	56.0	19.0	K	9.0	28 7.1	23.2		9.0	2 18.7	29.6	K
8.9	37.5	59.6	K	8.2	34 14.7	44.9	K	8.7	56.4	12.7	K	8.6	59.6	3.7	K	9.5	42.3	30.6	
7.2	58.0	6.3	K	8.6	22.7	29.0	K	9.5	59.3	28.0		9.5	29 50.8	8.1		8.2	45.8	12.3	K
9.3	59 0.0	49.7		8.5	25.7	14.6	K	9.4	3 23.1	21.3		9.2	30 11.4	34.0		9.1	3 24.2	46.6	K
8.5	6.7	42.8	B	9.5	37.8	12.4	B	7.5	26.7	43.8	K	8.7	27.2	4.4		9.3	5 8.8	1.7	
7.0	6.9	23.4	G	8.7	35 33.7	30.4	K	9.5	30.8	18.9		7.9	29.9	53.3	K	9.1	56.7	40.5	
9.3	19.0	30.8		9.2	47.5	20.1		9.2	57.7	45.3		9.5	31 39.3	29.1		8.7	6 40.3	29.6	
8.9	21.5	23.9		9.1	36 8.4	10.1		9.5	4 15.2	23.0		9.5	32 11.8	47.8		8.1	50.3	12.5	R
8.4	0 39.9	2.2	K	9.3	12.3	45.4		7.5	25.9	12.7	G	8.5	22.5	38.9	K	9.3	7 46.8	55.0	
9.5	1 29.8	38.8		9.3	29.4	18.6		8.4	35.7	6.5	L	9.5	33 4.0	18.6		9.2	9 11.7	58.0	
9.1	40.0	30.3	K	9.4	37 21.9	30.9		9.5	53.0	25.2		8.0	34 57.7	30.7	K	9.2	28.1	2.4	K
9.2	2 32.5	46.3		8.4	38 9.7	22.1	K	9.5	5 2.9	13.1		9.5	35 40.4	22.6	B	8.9	10 52.7	54.0	K
8.5	50.2	1.3		9.0	39 16.4	12.6		9.5	58.9	32.9		7.6	36 30.6	1.5	K	9.3	12 25.1	25.2	B
9.5	3 33.6	2.5		9.0	59.7	48.9	K	9.5	6 12.4	51.7		8.3	34.7	40.4	K	9.3	26.0	10.7	
9.2	4 15.2	25.6	B	9.2	41 47.5	9.5		9.5	22.1	43.3		9.4	37 4.7	44.8		8.2	13 15.4	8.0	L
9.3	5 45.2	17.3	B	9.1	49.3	21.4		9.5	30.1	59.4		8.5	20.7	44.1	K	8.6	14 15.5	10.8	K
8.5	6 42.5	39.8		9.4	59.0	11.8		9.2	59.0	58.4	K	9.4	38 56.1	21.4		9.5	28.3	12.2	
5.0	7 8.0	56.1	G	8.0	42 22.3	59.2	K	9.4	7 4.3	30.2	K	9.4	39 39.6	42.9		9.5	15 57.2	22.5	
8.3	8 13.4	39.3	K	9.2	43.2	15.9	B	9.3	7.0	56.9		9.1	49.9	14.2	K	8.0	16 13.0	40.6	K
9.5	20.3	29.6	B	8.9	43 46.7	6.9	K	9.5	8 11.1	22.2		9.1	41 4.6	3.7	K	9.4	32.7	12.1	L
9.5	28.6	5.7	B	9.1	51.6	49.3		9.3	25.1	59.7		9.4	43 56.6	39.7		8.3	17 7.3	1.2	B
9.0	39.0	52.1	K	9.5	44 30.2	12.4		9.0	38.7	7.4		7.9	57.7	4.4	K	5.5	16.3	6.3	K
9.5	9 14.5	57.2		9.5	40.0	35.8		7.3	9 38.1	21.2	K	9.2	45 44.0	56.5	K	8.4	18 1.5	52.0	K
9.5	18.4	33.3		9.1	45 3.9	23.1	K	9.5	39.2	26.6		9.4	46 12.7	6.6		9.3	16.5	52.0	
9.1	26.9	1.7	K	8.6	7.2	41.8	K	6.3	10 29.7	25.1	K	8.3	56.1	40.0		9.5	18.8	9.0	B
9.1	11 28.6	4.5	K	6.9	36.1	23.9	K	9.5	11 47.0	6.4		9.0	47 15.8	9.9		9.3	19 22.4	9.0	
7.8	55.9	39.8	K	9.2	53.1	18.4	B	7.2	12 4.4	34.7	K	9.5	24.9	52.3		9.2	25.3	46.6	
9.5	12 27.0	39.3		8.0	47 16.3	33.8	L	9.0	17.5	37.2	K	9.3	48 4.6	39.7		9.5	20 1.8	25.2	
9.0	36.6	25.4	B	8.8	56.8	20.4		9.3	13 52.7	44.4		9.1	24.2	23.9	K	9.1	45.2	19.7	
8.9	43.9	26.8	K	9.4	48 19.3	55.7		9.4	14 14.8	8.9		9.0	47.1	59.2	K	9.1	47.8	25.5	K
9.2	13 0.2	58.4	K	7.5	49 44.6	9.7	K	9.5	46.6	42.0		8.6	49 11.0	37.0	K	9.2	21 15.4	24.7	
5.5	50.8	55.9	K	9.5	46.7	12.9		9.3	15 0.0	18.8	K	7.3	53.9	14.5	K	9.2	22 23.8	48.6	
9.3	14 47.3	30.0		9.4	51 42.1	34.5		8.0	45.9	13.9	K	8.9	50 5.6	3.7		9.5	26.8	29.1	
8.0	15 19.0	9.1	K	9.5	52 11.5	4.2		9.1	16 5.9	34.6	K	7.9	12.9	14.0	K	9.0	23 13.1	45.9	B
8.5	34.8	38.4	L	8.5	20.0	34.3	K	8.8	6.0	58.6	K	9.4	38.3	29.6		9.5	21.2	45.8	
9.5	16 20.5	29.5		9.3	39.3	43.8		9.5	43.0	19.8		7.5	51 55.9	44.5	K	9.5	53.7	38.1	
9.5	32.6	27.0	B	9.4	54 11.9	16.0		9.5	17 25.9	52.7		8.8	52 11.7	45.6	K	7.0	24 48.5	25.1	K
8.2	45.3	23.0	K	9.5	18.5	13.2	B	9.0	18 22.5	39.1		8.6	32.8	48.3	K	7.5	53.2	51.0	K
7.7	55.9	11.5	G	9.5	28.4	16.0		9.5	24.6	1.3		9.4	50.9	51.5		8.0	25 0.0	10.8	K
9.5	17 43.6	1.1		9.5	58.1	17.9		9.4	33.9	54.9		6.5	53 51.9	13.3	K	8.5	52.9	51.0	
8.7	43.7	58.8	K	9.2	55 4.3	46.3	K	9.1	19 22.0	58.1	K	9.5	59.4	32.1		7.8	26 25.9	10.4	L
9.1	18 1.5	21.0		9.3	31.4	32.7	B	9.5	55.6	2.5		9.2	55 3.3	29.6		9.4	56.2	34.5	R
8.9	19 15.8	51.8	K	9.1	43.8	41.8		9.5	20 2.9	53.6		7.0	31.6	39.7	K	9.3	27 42.6	41.9	
9.4	20 21.8	41.0		9.0	59.3	45.8	K	9.5	4.5	58.3		9.4	56 27.5	36.7		9.5	55.9	0.9	
8.8	24 8.8	10.1	K	9.0	56 10.6	6.0		9.4	29.9	14.1		3.0	29.9	57.7	K	9.0	28 20.6	24.9	K

2901—2960				2961—3020				3021—3080				3081—3140				3141—3200			
	15ᵉ	+40°			15ᵉ—16ᵉ	+40°			16ᵉ	+40°			16ᵉ—17ᵉ	+40°			17ᵉ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.0	28 50.6	50.7	K	9.0	56 58.5	50.6		9.4	24 15.9	40.9		9.0	52 37.6	48.0	K	9.0	19 40.3	32.3	
9.1	30 5.3	10.7	R	6.8	59.5	24.7	K	9.5	27.5	42.2		9.5	53 18.0	54.2		8.7	20 1.4	52.7	
7.8	45.1	19.4	K	9.4	58 18.1	34.2		9.5	28.0	51.1		9.5	32.5	29.8		9.5	25.8	18.3	
8.2	49.5	48.3	K	9.5	32.2	1.4		9.3	33.2	13.4	K	9.3	54 50.4	4.7	K	9.2	31.1	51.5	
6.8	52.6	16.9	K	9.0	59 18.6	51.6	K	8.5	26 26.8	47.3	K	9.4	55 15.1	26.4		8.1	21 3.6	59.4	K
8.5	31 42.8	46.9	K	9.3	33.2	2.1	K	9.2	45.5	39.9	B	8.0	20.9	34.3	L	9.5	31.1	54.6	
5.0	32 37.1	50.3	K	9.4	0 41.5	37.7		9.4	56.7	43.6		9.4	43.5	41.3		9.5	55.8	34.2	
9.0	33 46.6	50.8	K	9.3	1 2.1	50.6		9.5	27 12.8	33.0		9.4	55.4	4.4	K	9.5	59.3	57.7	
9.3	34 10.1	59.3	K	8.5	10.5	7.9		9.2	17.0	6.2		9.3	56 47.1	17.9		9.5	22 42.2	1.8	
8.5	35 0.1	26.3	K	9.5	2 9.5	51.5		7.0	39.7	24.5	K	7.5	57 33.5	16.4	K	9.0	55.8	13.1	K
9.0	7.1	56.6	B	7.6	3 38.0	26.2	K	8.2	46.2	17.5	S	9.2	59.7	38.3		7.7	23 6.0	22.7	K
9.2	25.0	0.2		8.0	4 41.6	30.2	K	9.3	53.1	10.5	B	9.3	58 40.1	16.9	K	8.6	17.5	55.7	K
9.5	38 16.0	32.7		9.0	58.1	30.6	K	8.8	28 59.2	18.9	K	9.5	59 2.8	46.7	B	9.3	33.4	24.6	
7.9	48.6	1.1	K	9.0	59.0	42.6		9.3	29 22.5	5.2		9.0	14.2	40.5	B	9.0	25 38.7	29.7	
9.3	39 10.7	9.6		9.3	5 8.0	26.3	K	9.5	30 48.8	39.8		9.5	0 22.1	10.4		9.5	40.8	58.3	
9.0	47.1	7.5	B	7.0	19.5	54.7	K	8.3	49.8	25.4	K	9.5	38.8	43.7		9.0	43.6	47.0	
9.3	54.7	7.4	B	9.4	33.6	9.9		9.0	31 25.8	40.4		9.1	1 8.5	50.6		9.0	44.1	13.4	K
9.3	40 1.3	53.7	B	9.5	48.0	42.2		8.6	46.5	46.3	K	8.7	32.7	8.0	K	9.5	26 9.2	0.7	
7.2	23.1	36.8	L	9.0	6 17.7	36.4	B	9.0	47.3	28.9	K	9.2	53.5	6.4		9.3	25.0	51.8	
9.4	32.0	54.6		9.0	25.8	51.2	B	9.4	32 22.5	1.6		9.3	2 15.8	13.3		9.0	32.8	36.0	K
9.4	40.3	49.9		9.4	35.3	20.8		9.5	46.8	17.5		9.5	30.6	5.0		9.0	51.6	21.7	K
9.2	41 7.0	24.1		9.5	49.2	20.8		9.3	33 22.5	50.6	B	9.4	54.0	37.9		8.1	27 1.9	4.4	K
9.4	13.5	5.7		8.5	7 2.1	10.6	B	8.8	58.7	30.4	K	6.2	3 3.1	42.2	K	9.5	25.8	3.4	
9.3	53.3	9.4		9.2	8 11.9	1.8	K	9.3	34 10.5	13.9		9.3	47.6	12.2	K	9.2	41.7	7.9	K
9.0	43 3.5	27.2	K	9.0	15.5	20.8	K	8.9	31.3	26.4	K	9.3	56.6	29.8		9.4	49.4	1.8	
8.3	18.5	46.7	K	9.5	16.1	50.6		9.3	35 9.2	7.2		8.6	4 1.7	21.8	K	7.7	28 3.9	45.6	K
9.0	40.8	58.6	B	6.8	26.3	11.1	K	9.4	9.7	2.6	B	9.0	4.0	4.7		9.5	17.1	4.5	
8.0	44 10.7	7.0	L	9.4	35.0	4.8		9.4	38.8	37.4		8.5	26.5	49.6	K	9.3	19.2	41.5	
8.5	20.9	0.7		9.3	39.1	58.0		9.5	36 3.2	33.8		5.2	50.3	57.6	K	9.5	28.5	36.6	
9.5	45 5.6	23.8		9.5	40.8	27.3		9.2	3.7	15.3	B	7.7	5 36.1	52.6	K	9.5	40.8	54.0	
8.6	49.5	19.8		7.3	54.5	42.2	K	9.2	37.8	23.4		8.0	46.4	1.4		9.0	30 18.9	30.7	K
7.5	46 25.3	10.7	L	9.5	9 54.3	8.4		9.1	48.9	4.9		9.1	6 9.1	54.1	K	8.7	21.0	46.6	K
9.5	46.6	32.2		8.9	11 15.5	42.7	K	9.5	37 11.3	49.3		9.1	37.5	25.3		8.5	51.2	55.0	K
8.6	47 22.1	22.8		9.0	20.6	5.4		9.2	55.0	31.6		9.2	47.5	37.2		9.3	51.7	30.3	
9.5	25.0	53.4		6.8	49.0	22.3	K	9.4	38 1.4	31.6		8.6	7 0.5	24.8		9.5	31 0.0	57.0	
9.2	48 37.8	6.4		9.2	57.9	7.1		9.2	48.3	11.2		8.5	23.1	34.7		9.4	1.0	33.0	
9.5	49 18.1	28.3		9.4	12 53.1	29.8		7.8	40 17.9	54.3	B	8.7	26.5	43.3		9.5	31.5	0.5	
8.0	50 0.1	11.0	K	9.4	57.0	24.3		9.3	56.8	22.8		9.5	9 29.5	38.6		9.5	33.4	58.2	
9.5	7.1	36.3		9.5	58.8	40.7		9.4	41 10.3	5.7		9.4	10 31.0	21.0		9.4	38.0	54.4	
9.1	35.0	31.2	K	8.8	13 46.1	50.1		9.1	27.3	32.3		9.2	35.1	10.8		8.8	38.8	37.9	
9.5	36.2	13.0		9.3	56.0	58.0	K	9.0	39.9	48.7		9.4	59.6	25.8		8.8	32 5.7	4.7	K
9.4	43.6	5.6	B	9.4	14 2.5	3.7		9.3	52.4	5.4		9.3	11 31.3	30.7		9.1	28.9	53.5	
9.5	47.6	13.5		9.2	3.1	31.3		9.3	59.5	17.4		9.3	51.1	8.9		9.5	33 1.5	40.7	
9.5	54.4	9.6		9.2	31.9	1.4		9.5	44 38.1	1.5		9.5	51.1	33.1		9.5	7.2	35.7	
8.2	51 2.1	30.8	K	5.5	58.6	2.1	K	8.8	43.7	41.8		7.2	12 22.6	7.4	K	9.1	24.8	20.2	
9.5	3.4	9.8		7.3	15 21.3	36.2	K	9.2	45.4	32.5	B	8.8	25.5	42.7		8.1	47.9	51.2	K
9.1	52 3.9	11.8		9.3	16 38.5	24.8		8.8	45 11.8	54.2		9.5	46.2	26.8		9.5	55.8	44.6	
6.2	24.5	6.1	K	9.0	59.5	52.1		9.0	59.9	22.4	K	9.3	13 34.9	54.6		9.3	34 0.9	19.8	
8.5	44.6	13.8		9.2	17 15.8	13.5	B	8.8	48 16.1	59.3	K	9.0	54.4	43.7	K	7.5	16.5	59.0	K
9	57.7	50.7		9.2	19.6	22.3		9.5	47.7	52.2		9.0	14 0.1	56.6	K	9.3	22.3	6.8	
	53 16.6	43.7		9.3	23.5	50.7		9.0	49 57.8	51.7	K	9.5	21.6	30.8		9.4	44.1	9.3	
	21.1	42.7		8.8	27.1	30.8		7.5	58.2	56.2	K	9.3	39.2	2.3		9.5	35 11.3	22.0	
	28.5	59.1		9.3	18 38.4	1.4	K	9.5	50 25.8	33.8		8.5	16 6.5	54.1	K	9.5	16.0	15.0	
3	54 0.7	9.3	B	9.2	19 14.4	28.6	B	8.2	32.4	5.4	K	8.9	33.4	37.3	K	9.2	18.8	50.4	
9.2	24.1	31.2		9.0	21 26.1	18.8	K	9.2	51 15.6	55.7	K	8.5	57.8	13.4	K	9.1	36 3.2	35.6	
8.3	42.1	13.8	K	9.5	39.1	38.8		9.5	21.5	44.7		5.2	59.2	6.6	K	9.5	8.1	57.5	
9.3	55 7.0	39.1		9.3	22 10.2	12.8	B	9.2	22.9	1.8		9.3	17 29.0	40.7	K	9.3	54.0	44.2	
9.2	48.8	51.6		8.0	16.3	12.3	K	8.2	46.6	20.9	K	7.7	44.8	49.2	K	9.0	37 0.2	4.0	
9.0	56 0.5	42.1	K	9.5	23 5.1	29.3		9.0	52 13.1	22.5	K	8.0	19 5.8	44.7	K	9.5	17.5	16.8	
9.3	3.9	0.1	K	8.5	37.9	5.8	L	8.5	33.5	31.8		9.5	6.2	50.3		9.4	38 8.1	58.8	

3201—3260				3261—3320				3321—3380				3381—3440				3441—3500			
	17ᵘ	+40°			17ᵘ—18ᵘ	+40°			18ᵘ	+40°			18ᵘ	+40°			18ᵘ	+40°	
m		′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.4	38	13.8	31.4		9.2	55 42.9	4.0		9.2	10 18.3	17.6	K	8.6	23 56.9	7.7	K	8.5	34 1.8	19.5	K
9.1		55.9	4.1	K	7.9	56 49.4	19.8	L	9.5		44.1	0.4	9.5	24 8.0	29.0		8.7		12.5	21.7	K
9.5		59.4	37.5		7.5	59.1	10.6	S	9.2	11 8.6	38.4	K	9.3		15.4	33.2	8.4		13.7	33.9	
9.4	39	11.4	0.5		9.5	57 10.5	38.6		9.3		11.3	55.5	9.5		16.7	29.0	9.5		41.4	54.7	
7.8		40.6	31.5	K	9.3		16.0	37.5	9.2		26.4	35.4	8.8		21.9	58.1	9.4		50.4	23.3	
7.9	40	1.9	7.1		9.5		19.6	54.9	9.0		29.2	52.8	K	9.5		27.7	27.5	6.2		52.7	48.2	G
9.5	41	4.9	59.9		9.5		34.2	25.1	9.4		43.3	17.5	9.2		28.2	20.6	K	9.0	35	2.7	27.0	
9.5		20.2	55.3		9.4		38.6	52.5	9.4		54.3	43.5	9.3		34.6	44.8		8.8		13.3	36.4	
9.5		31.0	56.9		9.2	58 29.5	51.8		8.1	12 9.5	58.9	K	9.4		42.0	16.1		8.4		15.6	11.7	K
9.5	42	27.5	39.7		8.3		52.7	30.7	K	8.7		19.9	51.3	K	9.0	25	0.7	45.3	K	9.3		18.9	19.9	
8.3		38.9	32.4	K	9.3	59 6.1	32.7		8.4		25.3	12.0	K	9.5		32.5	56.1		9.5		31.4	10.3	
8.9		39.0	4.1		7.7		13.0	49.6	K	6.0		31.2	53.0	K	9.0		36.8	18.1		9.4		36.3	4.2	
9.1	43	10.6	49.3		9.3		21.1	1.0		8.9		33.2	16.9		8.8		39.3	37.3		8.7		44.5	19.8	K
7.0		15.5	1.4	K	9.3		49.2	27.9		7.2	13	6.6	15.7	K	7.0		53.7	52.6	K	9.2	36	0.4	32.7	
7.3		28.0	37.3	K	9.5		50.5	20.7		8.2		49.7	27.9	K	7.5	26	6.1	23.7	G	8.6		1.2	28.7	K
8.5		43.5	27.9	K	6.5	0	1.0	4.8	K	8.9		50.5	19.9	K	8.8		6.2	5.4		9.4		3.0	58.6	
9.5		45.8	59.9		9.4		18.7	0.3		9.3		51.2	53.4		9.1		14.6	14.9		9.5		37.1	53.7	
9.1		52.7	42.2		9.5		19.1	51.7		9.0	14	15.6	54.1	K	9.4		17.4	15.4		8.0		44.4	20.1	K
9.4	44	43.7	30.8		9.0		23.5	41.1		9.2		24.8	20.4		9.5		18.7	57.1		6.8		58.8	35.0	K
8.7	45	17.1	10.2	K	9.5		41.7	1.5		7.5		26.3	51.1	K	9.4		25.9	8.2		9.5	37	2.7	56.5	
8.5		26.5	25.5	K	9.5		45.8	32.7		9.3		29.6	29.7	K	8.7		28.4	3.3		8.2		2.8	42.6	K
9.5		47.3	49.4		9.3		45.8	3.2		9.3		52.5	39.0		9.4		36.3	21.6		9.5		10.1	23.3	
9.4	46	0.6	23.9		8.9	1	4.0	57.4		9.5	15	7.0	35.1		7.8		51.9	15.7	G	9.4		13.2	48.3	
9.5		5.9	45.9		9.4		11.5	53.4		9.4		32.9	20.6		9.5		56.1	31.5		9.5		24.9	32.7	
6.7		31.5	6.1	K	9.5		31.2	21.3		9.5	16	9.7	3.7		9.4	27	3.8	31.5		9.4		25.0	28.8	
9.0		37.3	26.9	K	7.0		49.6	22.2	K	9.4		25.1	52.5		8.8	28	1.8	26.2	K	9.5		38.7	42.2	
9.5		47.2	55.6		9.5		53.9	55.0		9.4		40.4	28.7		9.5		21.3	47.2		9.5		58.6	50.3	
6.2	47	22.1	0.6	K	9.4	2	8.4	0.2		9.5	17	3.5	34.8		9.4		27.2	33.1		9.5	38	15.9	38.2	
9.5		38.3	48.6		9.5		20.0	58.6		9.0		17.4	2.1		6.5		27.2	25.4	K	9.5		16.4	39.4	
8.7		42.7	58.3	K	8.5		23.1	9.5	K	7.5		41.1	19.2	G	9.3		29.4	3.3		9.5		24.1	25.6	
9.5	48	11.7	47.3		9.4		43.3	30.0		8.4		43.1	45.9		6.6		31.4	2.9	K	9.4		25.8	49.3	
9.2		14.2	57.2		9.5	3	6.5	0.7		8.5	18	12.0	51.1		9.5		36.7	36.3		9.2		37.9	29.2	
5.0		35.9	2.5	L	9.6		10.9	32.4	K	8.8		12.9	38.0		9.4		58.5	9.6		8.4		38.7	54.7	K
9.5		46.1	52.7		8.8		18.3	6.0		9.4		16.1	5.5		9.2	29	2.3	4.7		9.5		53.0	0.5	
9.0		50.4	54.7		7.1		28.4	53.5	K	9.5		28.7	56.0		9.4		30.8	33.2		9.5		53.8	10.2	
9.5		58.3	40.3		8.6		40.7	22.1	K	9.3		36.4	21.4		8.9		36.2	48.5	K	9.5	39	21.8	45.2	
9.5	49	8.4	36.2		9.5		58.8	17.9		9.5		56.4	2.2		9.3		42.7	58.4		8.8		54.7	58.1	K
9.5		16.6	58.0		9.5	4	35.3	34.5		9.1	19	9.9	21.3	K	8.9	30	11.6	43.7	K	8.9	40	18.8	9.2	K
8.4		28.4	29.1		9.4		39.9	46.6		9.5		20.1	5.8		9.0		17.3	24.9		9.5		19.4	42.3	
9.5		52.5	2.8		9.5		46.4	2.6		8.9		26.7	49.7	K	9.3		17.7	57.8		9.5		20.7	2.2	
9.5	50	1.3	28.5		9.2		58.4	0.1		8.8		37.7	49.2	K	9.3		19.9	22.4		8.7	41	23.3	6.9	K
9.5		13.4	4.9		9.1	5	1.7	42.4		9.5		40.8	20.0		8.8		45.1	43.0	K	9.4		48.5	19.5	
9.0		14.3	14.0		8.9		4.8	59.9		8.6	20	8.4	11.0		7.3		53.8	12.2	G	9.1		52.7	54.0	K
8.3		20.6	27.0	K	9.0		33.0	46.6		9.5		9.0	35.5		9.5		55.0	30.0		9.5		53.0	32.0	
9.2	51	8.9	30.5	K	9.2		53.5	1.0		9.2		33.9	30.4		6.8		56.9	38.9	K	9.2		58.4	56.7	K
9.5		21.2	33.5		8.7	6	27.7	28.8		8.5		35.8	24.0	K	9.1	31	20.0	54.2	K	9.3	42	51.7	1.0	
9.5		37.1	38.0		9.5		50.1	9.9		9.3		56.2	38.8		9.4		30.7	38.6		9.3	43	11.0	42.4	
9.4		49.4	15.8		9.4	7	0.4	18.5		8.8	21	38.4	44.5		8.9		33.1	54.9	K	9.1		17.4	12.0	K
9.2	52	27.9	29.0		9.4		21.2	12.3		9.2		45.4	14.1		8.9		51.7	21.3	K	9.3		42.7	14.3	
9.4	53	3.5	0.7		9.0		50.4	9.6	K	9.5		50.9	24.5		9.5		57.5	33.6		9.4		52.3	12.3	
9.5		14.5	37.9		9.0		55.6	43.1		8.6		56.8	49.1		9.5	32	9.6	56.3		9.3		53.7	3.3	
9.5		16.3	55.6		9.5	8	9.9	16.2		9.2		59.6	17.1		9.2		15.7	21.3	K	9.5	44	0.0	21.9	
9.5		25.4	31.4		9.1		10.6	10.3	K	9.2	22	4.9	20.0		9.5		27.0	52.9		9.4		16.5	56.2	
8.8		26.9	6.8	K	8.4		15.8	50.8		9.2		12.2	36.5		9.3		46.6	43.8		9.4		16.5	34.0	
9.5	54	26.2	4.0		9.1		22.4	53.2		9.5		15.8	25.7		9.3		54.3	47.0		9.1		23.6	30.8	
9.3	55	13.9	21.0		9.4		27.9	18.9		9.3		35.3	42.8		9.5		57.2	27.0		8.3		28.1	24.4	K
9.5		19.3	40.4		9.5		33.0	57.3		9.0		52.0	30.4		9.4	33	4.7	6.7		7.7	45	7.0	34.0	K
9.0		23.4	36.5		9.5		59.7	8.1		8.9	23	9.4	7.9	K	9.4		9.4	3.0		9.0		33.9	38.2	K
8.5		23.6	10.6	K	9.0	9	14.1	23.6	K	9.5		10.1	57.4		8.7		43.8	27.9		9.1		55.5	15.6	
9.0		38.9	0.9	K	9.5		47.8	59.0		9.3		11.3	10.0		9.5		46.5	58.3		9.5	46	7.6	52.5	

3501—3560					3561—3620					3621—3680					3681—3740					3741—3800				
	18ᵘ		+40°			18ᵘ—19ᵘ		+40°			19ᵘ		+40°			19ᵘ		+40°			19ᵘ		+40°	
m		′	″	′		m	′	″	′		m	′	″	′		m	′	″	′		m	′	″	′	
9.5	46	14.1	4.3			9.4	56	20.4	18.6			9.5	6	39.1	58.1			9.4	16	10.3	50.9			9.5	23	42.9	9.1	
9.5		26.7	2.2			9.5		22.5	58.5			8.3		40.7	26.6	K		9.5		19.9	40.8			9.5		43.4	12.8	
9.0		29.4	14.9			9.4		27.0	47.1			9.3	7	32.4	38.3			9.4		30.4	46.9	B		9.5		43.5	1.3	
9.0		34.9	41.3	K		8.3		37.9	23.6	K		7.2		33.5	59.5	K		9.5		45.8	4.3			9.4		43.9	2.6	B
8.5		43.2	13.9	G		9.4		39.2	48.5			9.5		46.9	6.9			8.8		55.3	49.2	K		8.4		49.0	54.3	K
9.5		51.5	46.3			9.5		56.5	17.4			9.5		48.0	13.5			9.2		56.5	56.1	K		9.4		49.3	57.1	
9.5		53.7	55.7			8.9	57	1.4	52.0			8.3		55.2	23.1			9.4	17	5.9	24.0			9.5	24	5.0	8.1	
9.4	47	2.9	40.6			8.5		22.1	31.3	K		8.9	8	5.4	39.7			9.1		27.0	33.6			9.4		7.4	11.4	
9.4		8.7	56.2			9.5		33.8	54.5			8.9		9.4	26.6			8.5		34.5	43.0			9.5		13.1	56.3	
9.5		42.8	4.6			9.5		37.2	51.9			9.3		15.3	43.4			8.7		46.8	50.4	K		9.5		20.6	9.2	
9.3	48	6.3	9.3			8.8	58	28.1	10.4			8.8		34.6	28.9			9.5	18	1.4	41.5			9.3		28.3	1.6	
6.8		36.4	49.1	G		9.5		40.8	18.6			8.8	9	0.5	18.5			9.2		5.2	6.7			9.3		29.2	46.2	
9.3		38.6	33.0			9.3		52.7	29.2			9.5		5.9	49.0	B		9.4		10.1	12.6			9.5		34.0	32.8	
9.2		38.6	12.1	K		9.5		56.4	11.8			9.3		9.2	11.1			9.5		12.1	26.7			9.4		55.5	46.4	
9.1		48.7	56.5	K		9.4	59	2.9	26.4	B		8.0		16.0	19.0			9.4		15.2	1.2	B		9.1		57.2	59.0	
9.3		53.4	17.3			9.1		3.0	42.0			9.4		29.9	47.4			8.8		26.9	26.2			9.5		57.4	21.7	
9.4		58.8	51.6			9.5		16.6	2.0			8.5		41.0	11.9	K		9.5		28.5	44.0			9.5	25	2.1	19.0	
9.3	49	2.0	4.7			9.1		16.9	16.4	B		9.5	10	0.4	53.9			9.5		34.2	2.9			9.5		40.3	17.5	
7.8		9.1	8.4	K		7.7		24.0	20.5	B		8.9		27.4	28.0	K		9.3		51.4	21.5			9.5		46.7	45.5	
9.5	50	8.0	18.3			8.8		24.7	17.7	B		8.7		30.3	25.3	K		8.0		55.0	30.4			8.0	26	0.5	12.4	B
9.5		11.9	35.1			8.0		31.9	47.2			9.0		42.8	17.1	B		9.5		56.2	3.9			9.5		11.9	50.3	
9.5		23.9	39.8			9.2		39.4	10.4			9.4		51.1	18.4			9.2		57.0	44.0	B		9.4		17.1	19.2	
9.5		24.2	59.4			9.5		50.3	30.5			8.9		51.9	55.5	K		9.5		58.5	47.8			9.5		23.0	25.3	
9.4		38.9	41.1			9.5		57.5	13.6			8.5		52.5	47.1	K		9.4	19	27.3	21.5			9.2		24.0	56.9	K
9.2		48.7	30.3			9.5	0	2.3	59.0			7.0		54.9	6.6	K		9.5		29.4	7.8			9.2		25.0	44.5	K
8.5	51	0.7	0.7	K		9.1		4.9	34.2			9.1	11	11.7	9.2	R		8.2		38.1	2.5	K		9.5		25.6	22.0	
9.3		24.9	20.4			9.5		20.5	52.4			9.2		28.9	2.9			9.5		42.5	57.1			9.4		30.7	5.2	
9.5		45.2	8.0			9.0		23.0	9.1	K		9.5		29.2	37.2			9.4	20	3.0	20.8			9.2		35.4	35.3	K
9.4	52	8.4	26.3			9.3		28.0	49.8			9.2		29.5	11.4			9.1		3.7	18.6			9.3		46.2	22.5	B
9.5		9.8	49.9	B		9.5	1	9.7	59.5			9.5		30.2	29.0			9.2		22.1	47.1			9.2	27	7.5	16.6	
9.5		11.3	55.5			9.1		21.0	26.7	K		8.7		35.1	3.2	K		9.4		23.1	6.1			9.5		11.3	0.4	
9.5		13.5	46.4			9.5		34.2	2.7			9.5		45.8	2.2	B		9.2		27.6	59.3			9.3		13.4	28.7	
9.2		17.0	36.7	K		9.0		46.0	31.1	K		9.3		59.4	26.9			9.0		30.7	34.0	B		8.5		15.9	7.0	
9.3		22.4	8.3			9.4	2	16.8	58.3			9.5	12	9.2	17.5			9.0		46.4	18.7	K		9.5		17.7	58.6	
9.1		23.9	40.4	K		9.3		23.5	27.9			9.5		34.1	11.8			9.3		48.1	34.6			9.4		26.3	39.2	
9.5		39.3	7.1			6.8		35.0	49.6	K		9.0		34.5	49.6			9.0		48.1	40.6			8.4		33.0	49.2	
9.5		39.4	31.3			8.6		35.4	28.1	K		9.5		46.1	15.0			7.6	21	5.0	54.5			9.5		53.4	23.8	
9.3		41.2	55.3			9.5		58.5	39.7			8.7		51.3	0.2	K		9.3		11.7	30.2			9.1		53.5	51.2	K
9.5	53	17.7	10.3			9.5	3	0.4	4.6			9.5	13	15.0	7.0			8.8		11.9	24.5	K		9.5	28	6.3	46.5	
9.4		29.5	59.0			8.6		11.0	36.5	K		9.5		30.1	51.1			9.5		13.1	0.6			9.2		17.6	44.5	K
8.8		30.9	35.0	K		9.3		33.6	47.7	B		9.5		32.8	17.5			9.0		14.5	58.0			9.5		31.4	51.9	
9.3		50.6	0.1			8.8		43.0	35.5	K		9.5		40.6	26.6			8.6		16.3	42.6	B		8.9		36.3	9.6	
8.7	54	2.4	33.1	K		9.5		59.5	1.2			9.5		43.0	29.1			8.7		16.3	12.6	K		9.5		51.8	19.2	
6.5		2.7	29.0	K		9.4	4	10.2	40.2			9.1	14	0.2	43.9			8.0		20.0	19.8	K		9.2	29	11.4	20.4	
9.5		14.1	49.9			9.5		21.6	44.2			6.6		7.3	5.7	K		9.3		21.1	47.2			8.9		13.3	23.9	K
9.4		19.9	50.6			9.5		27.1	6.7			8.7		9.8	17.9	K		9.3		28.7	41.4			8.8		16.1	56.2	K
8.9		30.8	0.7			9.3		35.4	51.4			9.4		11.1	28.4	B		9.0		43.5	37.3			8.7		26.5	35.3	
9.5		32.4	46.4			9.3		36.8	55.1			8.9		29.0	19.6	K		8.8		51.0	1.8			8.8	30	2.0	40.5	
9.1		36.3	3.9			9.5		58.0	54.9			8.0		41.8	56.9	K		9.5		54.8	0.7			9.5		5.3	33.3	
9.5		38.0	37.1			9.5	5	7.8	6.7			7.1		45.4	0.0	G		9.2	22	16.9	48.7			9.3		10.4	15.7	
9.5	55	3.9	21.3			9.1		8.3	39.7	K		7.7		47.1	18.5	K		8.5		18.1	45.2			9.0		15.0	49.5	
9.5		15.2	48.7			9.5		24.0	53.3			9.4		55.0	2.9			9.2		18.6	9.4			9.5		27.8	52.7	
9.1		27.0	24.6	B		8.7		24.3	24.9	K		9.4	15	1.3	31.0			9.2		28.0	19.3	K		8.0		37.1	21.6	K
8.7		30.4	0.1			9.0		30.1	22.7	K		9.4		6.6	53.6			8.9		48.0	35.3	K		9.1		39.6	6.9	
6.9		34.0	29.0	L		9.0		34.0	28.1	K		9.5		12.6	1.7			9.4	23	12.9	43.8			9.0		42.5	7.7	
9.1		34.2	17.8	B		9.3		35.8	14.3			9.5		25.2	0.7			9.5		17.3	32.5			9.3	31	0.2	59.3	
9.2		36.9	20.2			9.5		49.4	36.3			8.8		42.7	31.6			8.8		26.1	4.8			8.9		13.1	38.8	K
8.9		38.0	8.4			9.4	6	8.7	52.1			8.6		44.8	48.7	L		9.2		28.0	43.4	K		9.2		15.4	21.8	
9.5		56.1	53.6			9.5		29.0	59.7			8.2		49.5	39.3	K		9.4		30.6	41.4			9.2		17.6	48.7	
9.5	56	0.6	57.1			6.3		35.0	11.6	G		9.5	16	6.8	16.3			9.4		33.2	48.6			8.0		41.2	41.1	K

3801—3860

m	19h	+40°	
8.2	31 45.0	38.8	K
8.7	47.7	36.1	K
9.5	32 4.6	3.8	
9.5	13.5	48.4	
9.5	19.9	47.2	
9.3	22.4	41.0	
9.0	27.8	32.8	K
8.2	33.3	16.3	K
9.5	40.2	2.6	
9.5	40.5	14.6	
9.4	48.6	16.1	B
8.2	52.1	11.3	K
9.5	33 1.4	29.8	
9.5	3.2	22.9	
9.1	9.8	9.5	K
9.5	10.0	56.0	
9.5	28.3	33.5	
9.5	38.5	44.2	
9.5	38.6	43.7	
9.1	53.1	8.3	B
9.5	34 2.2	10.8	
9.3	6.7	1.5	
9.5	12.4	32.3	
7.5	13.3	17.5	K
9.5	26.5	34.1	
9.5	30.8	24.0	
9.5	31.3	13.7	
9.5	45.9	12.5	
9.5	35 6.5	31.6	
8.8	10.0	32.0	B
9.4	12.3	37.0	
9.2	15.4	39.8	
9.5	19.8	57.6	
9.5	22.0	47.7	
9.5	30.2	26.9	
9.2	31.6	1.3	
9.2	35.1	57.4	B
9.4	43.0	56.2	
9.4	43.0	56.7	
9.5	46.2	41.9	
8.3	49.7	44.1	K
9.5	58.8	46.3	
9.5	36 16.4	28.2	
9.0	25.1	3.3	
9.5	26.0	37.8	
8.3	43.9	18.5	G
9.2	53.7	40.7	
8.7	37 11.8	50.6	
8.8	14.9	36.5	
9.3	17.2	27.4	
9.5	25.1	31.1	
9.0	28.9	28.6	
9.5	47.5	50.8	
9.5	53.8	28.4	
8.9	56.7	1.0	
6.7	38 1.0	22.7	K
9.5	28.7	41.9	
9.5	29.5	47.7	
8.8	33.0	53.6	
9.4	44.3	9.9	

3861—3920

m	19h	+40°	
9.5	38 46.8	13.1	
9.3	39 2.4	23.7	
9.1	13.9	3.4	
9.4	16.6	24.2	
8.7	21.0	16.8	
6.3	55.0	21.7	G
8.7	58.4	45.1	B
9.3	59.5	45.9	
9.5	40 2.1	6.2	
7.7	52.0	12.7	K
9.5	41 6.4	11.0	
9.2	18.2	19.0	
9.2	20.7	38.7	B
9.5	23.2	48.2	
9.0	23.2	58.8	K
9.5	29.0	59.3	
9.4	48.6	56.3	
9.4	57.4	4.9	
9.3	57.5	37.0	
7.9	42 25.1	38.3	K
9.4	36.2	19.5	
9.5	43.0	33.6	
9.5	47.4	38.3	
9.5	49.5	33.9	
9.3	43 2.7	14.4	
9.5	7.1	6.3	
9.4	22.1	3.5	
9.1	29.7	55.7	
9.1	30.0	52.0	
9.4	49.5	48.3	
9.5	54.9	22.1	
9.5	56.2	2.9	
9.4	44 18.0	58.4	
9.5	33.7	7.1	
9.3	34.8	14.6	
9.4	35.9	52.5	B
9.5	41.5	32.0	B
9.3	45 7.0	8.7	
9.3	16.3	14.8	
8.7	17.7	1.2	
9.4	35.4	32.8	
5.5	39.0	14.0	K
9.4	43.2	16.2	B
9.3	45.4	27.1	
9.5	46 4.4	53.1	
9.5	6.5	48.5	
9.2	16.8	13.6	
8.2	25.9	21.9	B
8.7	43.6	40.7	
9.2	49.0	9.8	
9.5	53.2	47.2	
7.7	56.0	59.0	K
8.5	56.5	44.0	
8.8	47 4.4	26.1	
8.2	13.3	41.5	
8.7	19.6	19.0	K
9.3	26.3	9.6	
9.3	27.8	13.1	
9.4	32.9	34.8	
9.5	46.1	1.1	

3921—3980

m	19h	+40°	
8.4	47 48.2	50.8	
8.4	48.5	22.2	K
9.3	51.2	13.9	B
9.5	51.3	50.7	
9.5	56.1	0.6	
7.8	56.2	42.3	K
9.3	48 8.0	49.1	B
9.5	8.0	8.7	
9.5	27.3	0.5	
9.3	37.4	36.6	
6.8	43.0	59.3	K
9.4	53.0	55.7	
7.9	56.0	51.4	K
9.3	49 4.2	31.6	
9.5	9.0	56.0	
9.4	38.1	31.3	
9.1	50.6	30.3	B
9.4	51.9	14.1	
9.5	57.3	56.6	
9.5	50 5.8	38.3	
8.7	12.2	26.4	
8.5	12.7	54.6	K
9.4	16.4	10.4	
9.3	19.0	4.7	
8.6	20.2	7.1	
9.5	23.2	33.6	
8.7	34.2	26.3	B*
7.5	42.3	0.8	K
9.1	49.1	0.8	
9.3	59.5	54.5	K
9.4	51 37.0	25.6	
9.4	38.4	18.2	
9.4	40.7	42.5	
9.4	52 23.9	15.6	
8.3	32.3	4.0	B
8.5	31.8	10.7	
9.2	41.4	29.7	
7.5	53 2.9	32.1	L
9.0	3.0	55.0	
8.4	4.9	12.3	
9.5	18.1	20.0	
9.3	30.8	4.7	
9.5	52.0	11.9	
9.4	54 9.0	5.8	
9.4	18.6	55.7	
9.5	21.8	40.5	
8.9	29.3	48.2	
9.4	38.2	48.4	
9.5	45.4	24.0	
9.4	45.8	37.1	
9.2	55 1.6	52.7	R
9.3	13.8	20.3	
9.4	28.0	50.2	
9.5	41.8	54.2	
9.4	50.3	14.2	
9.4	56.9	31.5	
8.0	56 8.8	41.6	G
8.9	9.0	47.8	
9.0	17.2	5.8	
8.8	33.0	30.0	

3981—4040

m	19h—20h	+40°	
8.9	56 33.8	28.3	
7.0	49.6	26.8	G
9.2	50.2	26.1	
9.0	53.0	52.5	
9.2	57 23.2	2.1	
9.5	26.1	25.1	
8.8	29.7	56.5	K
9.3	32.5	41.6	
9.4	38.9	52.3	
8.1	47.8	52.2	K
9.2	52.3	33.0	
8.0	58 8.3	52.0	K
9.5	14.4	35.2	
9.0	24.0	19.9	
9.5	25.1	54.0	
9.5	27.8	47.3	
9.5	45.5	17.8	
7.7	57.3	14.2	K
9.4	59 0.4	3.9	
9.5	2.5	50.4	
9.5	16.6	1.5	
9.2	21.2	42.0	
9.2	46.8	36.8	
9.5	47.0	52.1	
9.2	57.4	57.6	
9.0	58.8	5.7	
9.4	0 0.2	13.7	
9.0	6.8	19.8	
9.2	8.0	55.1	
7.2	8.8	23.7	K
9.5	16.2	11.3	
9.4	18.8	12.8	
9.5	20.3	16.7	
9.4	25.6	7.4	
7.4	38.7	51.6	K
9.4	48.8	27.9	
9.4	55.3	20.5	
9.5	59.4	47.4	
9.5	1 4.0	10.4	
9.5	5.8	39.5	
9.5	7.8	39.7	
9.5	12.5	57.0	
9.2	29.8	46.6	K
9.4	51.6	14.9	
9.4	2 5.0	15.4	
9.2	5.9	46.8	
9.3	27.8	38.2	
9.5	41.5	45.1	
9.5	58.3	24.2	
9.5	3 13.1	16.8	
9.2	20.1	58.5	
9.5	20.2	49.2	
9.5	29.3	35.3	
8.9	31.4	8.9	
9.5	57.0	18.6	
8.3	4 18.8	41.0	K
8.3	33.8	0.0	G
9.5	39.9	14.7	
9.2	40.3	55.9	
9.5	52.3	55.9	

4041—4100

m	20h	+40°	
8.8	4 58.4	44.0	K
9.5	5 10.5	21.3	
8.0	22.0	3.0	G
9.0	26.7	44.0	K
9.0	31.8	46.9	K
6.9	41.8	49.1	K
9.0	43.2	42.7	
8.8	50.0	16.3	
9.4	50.8	24.0	
7.8	56.3	55.6	K
8.0	58.7	30.9	B
9.2	6 3.8	47.5	
8.1	15.0	43.6	
9.3	23.0	14.9	
9.5	37.4	43.9	
7.9	38.4	57.5	K
8.7	39.8	25.0	
9.5	56.6	20.8	
8.6	7 5.3	55.3	K
7.5	51.6	17.1	K
9.3	56.0	35.4	
9.5	8 4.5	52.0	
9.5	5.1	11.3	
9.5	6.7	29.0	
9.4	7.0	22.8	
9.5	18.5	39.2	
8.8	37.4	47.4	
9.0	38.8	24.4	
9.5	53.2	11.7	
9.5	57.1	40.2	
7.9	9 11.9	16.2	K
9.0	14.8	49.1	
8.8	28.8	47.9	
9.5	38.0	20.6	
9.4	39.9	8.0	
9.5	50.6	57.2	
7.7	10 4.5	51.5	G
9.3	9.8	48.3	
7.2	13.9	30.8	K
8.4	19.6	3.4	
8.9	36.0	52.0	
9.1	48.0	25.1	
9.3	50.2	10.8	
9.2	52.8	33.4	K
9.5	53.2	36.9	
7.8	11 8.5	30.8	K
8.6	29.2	26.1	K
8.7	37.6	47.3	
8.6	44.8	52.3	
8.8	53.4	23.6	K
9.1	54.3	59.9	
9.0	12 3.0	56.3	
7.0	5.1	8.9	K
9.1	8.8	17.5	
9.3	10.0	53.8	
9.5	18.9	5.9	
9.4	24.8	4.7	K
8.5	36.0	3.2	
9.5	51.9	40.2	
9.5	54.5	34.5	

4101—4160				4161—4220				4221—4280				4281—4340				4341—4400			
	20ᵐ	+40°			20ᵐ	+40°			20ᵐ	+40°			20ᵐ	+40°			20ᵐ	+40°	
m		′		m		′		m		′		m		′		m		′	
9.5	12′ 55.2	26.8		9.3	20′ 12.5	12.4		9.5	27′ 15.2	55.0		9.3	36′ 32.8	54.9		9.5	46′ 13.0	33.2	
9.1	57.1	54.5		9.5	35.3	57.6		9.5	17.3	30.0		8.9	44.0	56.0		9.5	50.2	56.9	
6.3	59.8	16.7	S	8.7	40.8	7.5		9.5	26.8	30.2		8.8	48.8	53.1		8.9	47 2.9	27.0	
9.5	13 12.8	5.6		7.5	48.3	51.5	K	9.0	30.0	1.8		8.5	49.7	9.5	K	9.5	44.3	47.3	
8.9	15.4	5.1	K	7.4	21 13.8	53.6	K	7.0	50.6	58.5	K	9.5	53.0	59.2		9.0	48 14.0	48.0	
9.0	20.0	28.9		8.9	16.0	56.5	K	8.0	59.0	7.4	L	8.6	37 14.4	54.0		7.5	17.6	30.0	G
9.5	24.1	29.9		9.4	17.3	58.4		8.5	28 1.0	49.1	K	9.4	45.8	20.0		9.0	19.6	7.8	K
9.4	25.8	30.9		9.4	17.7	27.9		9.0	3.6	32.1		9.4	46.3	29.1		8.6	38.6	9.3	K
9.4	36.5	46.0		9.5	18.8	10.9		9.0	4.4	26.7		7.8	47.8	16.2	K	8.3	38.7	46.6	
9.5	44.8	53.1		9.4	24.3	20.4		8.6	5.0	29.0	K	8.2	51.2	6.4	K	8.4	40.4	21.4	
9.5	44.9	43.7		9.0	40.5	31.1		9.2	11.1	20.1		8.2	51.7	45.2		9.5	47.6	37.5	
9.5	47.2	30.1		9.5	49.7	37.8		9.3	37.0	0.9		8.0	38 9.0	11.8	K	9.4	48.1	14.0	
9.5	49.5	15.0		9.5	55.4	39.4		8.9	38.7	3.9		8.4	13.1	21.7	K	9.1	52.4	17.5	
9.5	14 4.8	22.2		9.2	22 8.8	32.6		9.5	59.1	56.1		9.4	38.4	41.0		6.8	58.3	9.6	K
8.8	14.5	25.4		9.5	11.1	30.5		9.2	29 5.7	12.1	K	9.0	43.9	18.7	K	9.5	49 13.5	8.5	
7.6	16.0	56.0	K	9.1	20.9	17.5		8.7	10.1	7.7	K	9.5	45.9	44.9		8.5	34.6	47.3	K
9.5	22.9	11.6		9.0	21.6	59.7	K	9.5	12.0	48.4		9.1	39 8.2	31.9		8.8	42.0	20.4	
9.5	22.7	26.8		8.7	22.3	57.3	K	9.4	15.0	27.2		9.4	24.5	59.3		9.2	50 6.6	38.7	
9.0	32.4	25.4		9.4	30.7	6.9		8.6	15.8	11.3	K	9.5	30.0	56.1		9.5	15.5	58.6	
8.7	34.3	40.8		9.5	35.2	7.8		6.5	22.7	35.5	K	9.3	35.2	48.3		9.5	29.3	51.3	
7.4	38.1	40.9	L	8.9	46.8	14.8		9.4	54.9	50.3		9.0	36.7	47.0	K	9.4	44.4	58.1	
9.5	15 0.0	40.1		9.5	53.0	30.1		9.3	30 33.4	42.1		9.1	47.3	0.8		8.6	51.4	6.4	K
9.4	17.7	55.6		8.2	53.2	7.6	L	9.5	33.9	52.0		9.0	48.6	11.7		8.5	51 41.6	42.9	K
9.5	22.7	54.2		9.5	23 1.3	16.8		9.5	40.0	0.6		9.3	55.9	33.3		4.0	46.6	36.7	K
9.4	33.4	2.7		9.4	4.0	9.2		9.5	50.7	0.4		9.0	40 1.8	48.2	K	9.1	47.1	12.0	K
9.4	38.2	54.5		8.9	10.8	50.8		7.5	31 13.6	32.6	K	9.3	11.6	44.9		9.5	56.9	16.7	
9.3	42.8	45.0		9.0	20.9	19.4		9.2	37.4	28.1		9.5	14.8	33.7		9.5	52 2.0	53.0	
8.9	16 2.9	59.8		8.0	21.5	25.3	B	9.0	39.1	55.9		9.2	15.2	8.6		8.8	8.5	25.1	
8.0	8.3	20.5	B	9.4	34.9	28.2		9.4	41.0	8.3		9.5	23.9	12.7		8.2	35.9	20.7	
9.5	11.9	4.7		9.2	37.7	9.9		8.9	32 4.1	42.9	K	9.1	46.8	43.1		8.9	37.7	9.7	
9.5	15.3	47.2		9.5	50.3	22.7		7.3	12.0	53.2	L	9.5	41 7.2	58.6		9.4	44.2	36.5	
8.3	18.8	44.0		9.4	57.8	52.5		8.8	20.9	8.7		9.2	34.8	5.1		9.2	46.9	56.0	
9.3	30.8	23.7		9.5	24 0.5	11.7		9.5	23.5	26.7		9.2	53.0	54.6		7.7	53 3.6	48.0	K
9.4	36.4	4.7		8.4	2.2	19.0		9.5	25.7	24.1		9.5	42 13.9	10.4		8.1	5.8	8.0	P
9.0	52.8	16.3		9.2	7.4	39.2		9.2	37.0	42.8	K	9.2	15.6	6.4		9.0	10.2	25.5	
6.5	56.6	39.8	L	9.5	9.0	16.4		9.4	42.8	17.9		9.5	20.7	31.0		9.4	33.0	2.5	
8.6	59.2	30.9		8.7	16.6	31.2		8.8	43.5	38.5	K	9.3	39.0	53.3	R	9.5	42.6	35.2	
9.3	17 33.1	7.4		9.5	31.0	56.7		9.5	44.5	9.3		9.5	43 0.1	2.4		7.3	54 2.0	24.1	K
8.3	34.4	15.1	B	9.1	36.8	33.1		9.5	52.2	27.6		9.4	3.6	5.1		9.5	22.5	47.9	
9.3	37.3	56.8		9.3	44.8	35.3		9.2	53.0	49.1		9.5	6.5	8.8		8.9	23.4	29.5	K
6.0	37.8	33.6	G	9.2	46.4	56.4		9.0	33 20.0	38.6	K	9.5	10.4	44.1		9.1	27.2	41.8	
9.5	51.8	8.3	B	9.5	25 1.4	0.3		9.4	20.5	50.1		9.1	10.3	27.6		8.4	55 12.6	7.2	
8.7	54.0	8.8	B	9.5	4.5	52.4		9.5	22.6	32.8		8.9	13.7	12.5		9.5	35.3	48.3	
7.7	56.9	19.8	K	9.2	6.9	48.4		9.5	50.3	25.1		8.2	24.3	37.8	K	9.4	38.1	44.6	
9.5	59.1	22.3		7.7	9.6	10.8	B	9.5	34 6.0	42.4		9.1	26.6	26.1		9.1	38.1	6.4	
9.5	18 0.6	17.7		7.1	17.3	1.3	K	6.0	16.0	4.2	K	9.3	31.2	16.7		9.3	39.6	51.1	
8.3	3.2	24.8		9.5	32.1	20.8		8.5	21.5	4.7	K	8.5	37.6	7.3		9.5	45.0	26.6	
9.5	4.4	17.3		9.5	36.6	15.0		9.5	43.4	55.7		7.6	47.3	22.8	B	9.5	46.3	7.4	
9.5	7.9	16.6		8.6	40.5	50.3		9.5	43.6	27.1		7.9	55.7	36.2	K	7.0	57.4	2.8	L
7.4	8.9	17.4	K	9.4	48.4	2.0		9.4	44.8	4.2	K	8.3	44 2.8	17.1		9.5	56 14.0	10.5	
9.1	30.8	28.5		7.1	53.8	22.2	B	9.2	47.3	22.2		8.3	4.6	11.3		8.9	57 3.5	50.6	
9.2	55.9	54.9		9.5	26 25.9	43.3		9.5	49.9	44.0		9.5	5.0	3.0		9.5	7.3	29.5	
9.4	19 4.4	1.2		8.7	34.8	47.6		9.0	35 22.4	6.9	K	8.7	18.6	33.7	K	8.4	13.6	43.1	
9.3	8.5	10.6		8.3	35.0	37.3	K	9.1	27.3	50.4		9.5	56.5	10.5		9.5	48.3	29.5	
8.2	8.8	33.3	K	9.5	41.3	56.1		9.0	28.2	27.4		9.2	45 12.9	28.8		9.5	55.7	41.8	
9.4	15.1	57.8		9.5	43.5	25.6		7.0	38.1	41.0	K	8.3	32.4	40.7	K	9.4	58 3.4	17.8	
9.0	17.8	21.5		9.5	46.5	5.8		9.1	51.3	24.7		8.9	36.1	50.1		9.0	11.0	6.0	
9.5	18.3	26.0		9.0	54.8	27.5		9.4	36 1.6	20.5		9.5	40.6	52.5		9.5	15.5	40.3	
9.5	54.5	6.2		9.5	27 2.4	57.4		8.8	6.2	23.9	K	9.5	46 3.6	22.3		9.2	58.2	22.3	
8.2	20 5.9	31.3	K	9.1	10.9	48.8		9.4	24.0	37.7		9.4	10.6	50.7		9.5	59 1.5	6.5	

4401—4460				4461—4520				4521—4580				4581—4640				4641—4700			
	20ᵘ—21ᵘ	+40°			21ᵘ	+40°			21ᵘ	+40°			21ᵘ	+40°			21ᵘ	+40°	
m				m				m				m				m			
8.2	59′ 13.6	26.0	K	9.5	10′ 20.0	1.2		9.2	20′ 19.5	34.2	K	9.5	30′ 55.7	39.6		9.3	42′ 50.2	38.0	
8.5	27.3	6.2		8.9	21.8	40.5	K	7.9	40.2	44.6	K	9.0	31 10.0	10.1		9.0	51.4	6.2	
9.5	29.5	53.1		9.1	33.3	25.0		9.2	45.0	32.7	K	9.5	22.9	47.9		9.4	43 12.7	42.5	
9.4	33.0	50.4		9.5	44.6	12.8		7.5	54.9	6.9	L	8.5	40.6	38.9		8.3	15.2	32.7	L
9.4	42.8	11.9		9.5	46.9	56.9		9.5	56.9	36.3		9.5	42.4	0.6		8.8	23.7	25.7	K
9.3	49.6	49.9		9.5	48.2	52.7		9.3	21 23.4	14.5		9.5	51.8	55.3		8.2	24.1	21.2	K
8.4	0 3.6	35.2		9.5	52.6	33.9		9.3	32.0	19.9		8.8	32 1.7	11.5	K	8.5	37.7	26.0	K
9.5	6.2	0.9		9.5	52.6	52.8		9.3	36.9	33.4		9.4	2.9	22.5		6.2	45.9	28.4	K
9.3	11.7	0.9		9.3	54.0	42.3		8.6	49.7	59.7	K	7.5	14.4	26.0	K	8.5	53.6	55.4	
9.5	33.3	54.7		9.2	54.4	46.6	K	9.4	51.1	37.6		9.5	27.5	15.3		9.3	56.6	20.1	
8.9	39.6	27.0		9.2	59.8	22.6		9.5	22 10.3	44.0		8.4	30.3	18.9	K	9.4	57.3	30.1	
8.4	41.9	23.8	K	9.4	11 2.3	12.2		9.0	11.0	9.3		9.0	35.5	53.2		9.1	44 3.7	47.0	
8.7	1 32.6	50.0		9.2	2.6	2.3		9.4	13.4	8.0		9.2	35.7	44.6		7.8	31.9	23.0	K
9.0	37.0	58.7		9.2	13.1	53.6	K	8.1	21.4	56.4	K	9.5	46.9	36.2		9.4	41.1	46.7	
9.0	40.8	47.3		9.4	22.3	40.8		9.0	24.4	32.3	K	9.5	50.5	38.7		9.2	45 51.4	48.0	
9.5	2 3.2	37.0		9.4	57.5	13.6		8.8	37.0	6.1		9.5	52.9	50.2		9.3	58.5	6.3	
9.5	11.9	1.0		9.4	12 0.3	40.8		9.5	39.9	39.0		9.5	33 12.1	3.0		9.4	59.0	51.2	
9.5	30.6	3.7		9.5	6.2	59.3		9.5	40.9	22.6		8.8	19.4	10.1	K	7.8	59.1	58.2	B
9.5	33.7	58.3		9.0	24.5	35.6		9.5	23 1.5	35.6		9.5	46.9	10.3		8.8	46 11.2	39.0	
8.7	40.0	19.6		9.4	33.6	43.2		9.3	9.5	30.7	K	9.4	34 1.5	7.8		9.5	36.8	49.0	
9.5	3 22.3	0.4		9.5	37.3	36.4		9.5	11.6	56.4		8.7	2.9	56.1		9.1	47 8.5	41.0	
9.0	22.3	39.9		9.5	42.1	43.6		9.4	14.4	22.0		9.5	25.9	22.3		7.3	9.8	55.4	K
9.5	24.8	12.0		9.1	13 7.8	31.8		9.5	18.0	11.6		9.5	28.0	7.6		9.3	24.0	15.3	
8.0	36.4	59.5	K	9.5	14.1	42.9		9.5	56.9	26.3		9.5	34.2	11.2		8.6	51.0	0.0	
8.8	4 5.1	1.1		6.5	19.5	26.1	G	9.5	57.4	38.3		8.9	48.4	28.0		9.5	48 15.2	47.0	
9.0	15.8	0.3		9.0	42.3	4.2		9.5	59.0	9.7		9.5	55.9	56.8		9.0	35.5	41.3	
9.0	21.3	44.4		9.2	49.7	46.8		9.5	59.9	16.7		9.1	35 24.4	23.3		9.1	37.4	7.7	
9.2	25.8	0.4		9.4	14 3.2	47.8		9.5	24 15.0	27.8		8.5	24.4	37.2	K	9.1	44.6	15.0	
9.1	27.8	58.8		9.3	4.5	7.5		7.4	19.4	52.8		9.5	34.9	38.5		9.1	55.2	2.3	
9.0	5 1.3	35.1		9.5	5.0	1.7		9.1	29.5	6.2		9.3	41.7	8.2	K	8.8	49 7.1	37.2	
8.8	34.4	53.6		9.5	17.3	38.3		9.3	49.0	44.2		6.3	45.3	8.9	K	8.6	26.9	10.9	K
7.0	50.3	35.6	K	9.3	21.4	34.0		9.0	55.4	20.0		9.3	55.0	19.5		8.2	40.7	8.6	K
9.0	52.8	32.3		9.4	54.2	56.5		9.5	25 12.0	40.5		9.4	36 19.5	17.4		9.4	57.5	19.7	
9.4	6 0.0	20.3		9.3	59.3	27.0		9.5	26.9	19.0		9.5	28.2	37.8		9.5	59.1	57.8	
7.9	0.5	39.1	K	9.5	15 14.1	54.6		8.3	32.7	54.2		5.9	33.4	25.0	G	9.3	50 10.5	39.6	
9.5	15.4	0.1		7.8	17.4	49.8	K	9.5	50.4	2.0		9.5	37.6	21.0		9.0	14.8	27.1	K
7.7	21.4	10.9	K	9.1	24.5	14.8		9.5	26 13.9	27.4		7.6	42.4	23.4	G	9.5	35.8	54.5	
8.5	29.3	55.9		8.8	55.0	21.7		8.8	20.4	57.5	K	9.5	54.2	0.7		9.5	54.5	25.3	
8.7	29.8	39.5	K	9.0	16 2.7	16.3		8.9	24.5	43.0		9.3	59.6	56.2		9.5	51 0.5	31.1	
9.3	35.4	50.1		9.5	16.5	47.4		9.5	56.0	24.9		9.5	37 0.5	52.3		8.8	23.2	14.6	K
9.5	39.0	4.3		9.4	32.9	2.7		9.3	27 0.0	53.1		9.5	8.0	10.1		9.4	26.1	1.4	
9.5	44.8	51.8		7.2	17 10.0	19.2	G	9.5	7.2	30.8		9.4	11.9	0.4		9.5	29.2	59.4	
9.4	49.4	48.7		7.6	11.5	4.9	K	9.5	16.4	48.9		5.1	16.9	29.8	K	8.0	33.9	45.9	K
9.5	7 14.6	35.0		9.4	12.9	1.5		7.5	22.9	11.5		9.2	20.2	42.4		9.5	58.5	56.0	
9.2	46.5	40.0		9.1	13.0	2.4		8.8	24.3	1.6		9.5	26.7	42.9		9.5	52 20.6	59.2	
9.3	48.8	15.7		9.0	48.0	38.4		8.9	30.0	39.9	K	9.0	34.7	56.8		9.3	36.0	33.3	
9.4	8 22.2	31.8		8.7	53.0	14.4	K	9.5	39.0	54.7		8.8	36.4	51.1	K	9.4	41.5	41.2	
9.5	31.4	41.9		9.5	18 14.0	40.0		9.5	55.6	1.0		8.8	38 9.5	22.3		9.5	47.7	11.3	
7.0	45.3	32.8	L	9.5	14.3	12.4		9.5	28 7.0	22.5		9.5	28.9	4.9		9.1	50.1	46.9	K
9.1	50.7	23.6	K	9.5	20.4	51.7		9.5	55.7	2.0		9.5	39.0	7.8		8.6	53 8.4	49.3	K
9.5	51.0	0.4		9.4	28.9	45.1		8.3	29 2.4	38.7	K	9.4	42.6	55.7		8.3	17.0	40.8	
9.5	53.8	47.0		9.5	34.2	58.4		9.5	8.0	16.7		9.3	39 4.9	46.2		8.5	17.4	23.3	
9.2	54.2	9.9		9.5	19 10.5	28.3		9.4	21.5	43.5		9.5	11.0	4.9		9.1	38.9	0.0	
9.5	54.4	38.1		9.3	19.9	44.4		9.5	22.5	28.8		9.5	31.0	39.3		9.1	43.4	52.1	K
9.3	9 41.3	59.8		9.5	26.9	15.6		9.0	54.4	21.1		9.5	34.9	4.7		9.4	54 9.3	31.6	
9.5	42.1	11.8		9.5	31.3	59.5		8.4	30 4.4	23.8		8.9	44.0	31.8		9.3	23.9	9.7	
8.2	44.2	36.5	K	9.5	32.0	3.7		8.5	32.5	47.0		9.5	46.6	52.9		9.0	52.9	36.5	
9.3	49.3	41.7		7.8	33.9	27.2	K	8.5	35.0	5.3		8.6	50.5	44.7		8.5	57.8	1.1	
9.3	10 10.5	42.1	K	9.5	20 3.0	6.0		9.4	42.3	26.0		9.5	40 48.2	19.9		8.5	55 8.1	23.0	K
9.1	19.9	46.8	K	8.5	11.5	10.2		9.0	47.4	40.0		9.1	42 41.3	6.9		9.3	16.6	43.8	

4701—4760				4761—4820				4821—4880				4881—4940				4941—5000			
	21ᵘ—22ᵘ	+40°			22ᵘ	+40°			22ᵘ	+40°			22ᵘ	+40°			22ᵘ—23ᵘ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
9.5	55 17.4	8.7		9.5	7 34.7	10.4		9.4	19 45.4	22.6		9.1	34 53.2	23.2		9.5	49 6.5	2.2	
9.3	17.6	48.3		9.4	41.4	57.6		9.0	20 7.9	23.5		8.9	56.4	16.9	K	8.0	19.9	34.8	L
9.5	32.4	38.3		9.5	43.6	5.9		9.4	37.0	26.5		9.2	35 6.6	11.5		9.0	21.6	50.7	
7.2	44.0	50.7	K	9.4	54.2	48.3		9.5	21 7.8	25.8		8.9	8.2	7.7		9.2	21.7	45.8	
8.8	56 24.1	29.8	K	9.3	8 10.4	51.6		9.5	9.5	21.9		6.1	9.4	49.2	K	9.4	30.0	12.0	
9.0	32.5	31.6		8.7	46.5	58.9	K	9.4	15.7	59.2		9.5	36 2.7	24.7	B	8.8	35.1	15.5	K
9.4	39.0	5.7		9.5	9 3.4	27.5		9.5	30.0	27.3		8.9	52.1	56.4		9.1	41.9	7.5	
9.4	53.3	9.1		8.8	6.2	2.6	K	9.5	37.0	26.9		9.0	37 25.7	48.5	K	9.5	47.6	8.0	
9.5	54.4	25.4		7.3	18.0	7.9	K	8.5	23 2.2	22.5		9.1	27.2	58.7		6.2	48.1	50.6	S
7.6	57 9.9	42.1	K	9.3	10 30.4	34.8		9.5	14.8	25.9		8.5	47.6	45.5	K	9.2	50.2	22.8	K
8.5	16.9	21.2	K	8.9	11 0.1	14.3	K	9.0	22.6	10.8	K	9.4	57.0	25.6	B	9.4	55.4	25.2	
9.5	23.0	56.1		8.9	42.6	40.6	B	8.8	30.0	43.0		9.5	59.2	1.2		9.3	50 9.3	15.5	
9.5	28.4	48.4		9.3	45.4	49.0		8.8	37.3	41.3		8.9	38 9.9	23.3		8.3	23.9	8.0	
9.5	56.1	20.8		9.4	12 3.3	7.2		9.0	38.2	35.6	B	9.5	12.2	45.6	B	9.5	51 2.2	11.3	
9.5	57.1	17.2		9.0	24.7	26.1		7.0	54.0	13.7	K	9.5	28.9	6.4		9.2	33.6	12.7	
9.5	58 13.3	14.7		8.9	35.0	48.2		9.0	58.3	47.0	B	9.5	32.0	3.1		9.3	52 9.3	11.4	
9.5	21.5	49.4		9.0	46.8	53.4	B	9.5	24 10.0	31.5		9.5	48.2	18.3		9.2	27.1	57.3	
9.5	32.6	23.6		9.2	48.8	41.4		9.5	17.0	28.5		9.5	56.5	13.0		8.3	43.0	6.6	K
9.5	47.0	28.9		8.6	52.6	16.0	K	9.0	19.7	23.9		9.4	39 2.0	15.8		9.5	47.8	36.0	
9.0	54.6	15.7	K	9.5	13 6.7	57.1		9.5	38.2	26.7		9.5	2.9	59.3		9.5	53.5	1.8	
9.5	59 39.4	51.7		9.4	12.9	27.0		9.2	42.7	12.4		8.6	9.2	26.6		9.3	53 0.9	20.3	B
7.8	39.9	39.0	K	9.5	23.4	9.4		9.1	57.8	42.3		9.4	53.9	3.2		9.5	0.9	17.3	
9.0	0 39.4	4.8		9.3	28.7	57.2		8.0	25 0.9	28.4	S	9.4	56.2	26.7		9.5	39.2	44.8	
9.3	50.6	7.8		8.8	41.1	9.1		9.4	46.8	40.5		9.4	56.3	24.0		8.6	39.8	59.6	
9.0	53.5	21.9		8.3	50.2	58.7	K	8.8	26 23.3	5.2		9.1	40 19.2	32.5	K	8.3	42.7	22.2	
9.2	1 30.0	22.7		8.8	54.7	44.2		9.1	28.6	21.5		9.5	29.7	21.7		9.5	54 25.4	19.3	
9.3	33.9	38.4		9.5	14 45.6	4.0		9.1	28.7	17.6		9.5	35.8	51.9		9.5	25.7	2.3	
8.7	47.1	55.1		9.5	48.8	15.4		7.5	41.9	36.3		9.4	42.7	43.7		9.0	39.8	49.7	K
9.5	47.7	20.2		8.0	49.9	51.7	L	9.5	57.8	28.4		9.3	41 8.0	5.2		9.5	55 34.3	40.4	
9.5	2 8.4	43.6		9.0	15 5.2	30.0		6.7	27 10.6	3.5	K	8.5	13.9	19.3	K	8.8	40.7	37.8	K
9.4	9.7	54.1		8.8	11.7	33.0		8.3	17.5	25.3	B	9.5	30.5	13.7		8.7	41.5	16.6	
8.6	17.9	14.6		9.4	38.7	57.6		9.0	28.2	55.3		8.0	44.4	46.5	B	9.4	57.8	57.0	
8.7	25.4	43.5	K	9.5	45.5	56.8		9.1	51.4	39.9		9.0	42 2.7	50.0		8.0	56 1.6	29.4	K
9.0	55.5	13.7		9.5	16 8.6	2.3		7.2	28 7.5	2.3	K	9.5	32.3	21.4		8.3	6.7	25.9	K
9.4	58.2	5.1		9.3	19.6	14.3		9.2	7.6	30.8		9.3	44.0	5.2		9.5	18.5	20.2	
8.7	3 2.6	1.4	K	9.2	25.4	19.7		7.7	32.0	49.5	K	8.8	46.2	37.5		9.4	26.7	37.5	
8.4	6.7	18.8		9.2	29.5	53.6		9.5	29 52.8	43.4		9.4	43 6.3	11.7		9.5	39.6	2.1	
9.4	13.2	25.0		9.5	39.6	1.8		9.5	30 7.5	54.1		9.3	20.2	36.7		8.6	48.1	36.2	
8.9	15.7	34.1		8.4	49.7	31.8	K	9.4	8.2	18.3		8.8	22.5	28.3		9.4	57 2.1	22.3	
9.2	22.8	5.8		9.2	17 3.0	11.1	B	9.5	27.7	24.2		9.1	24.7	15.8		9.5	6.8	37.6	
9.4	27.9	0.9		9.4	12.2	15.5		9.2	58.8	2.2		9.4	28.4	2.0		9.0	10.8	6.3	K
8.9	31.0	5.6	K	9.4	27.2	5.9		9.0	31 0.7	16.2		9.4	52.2	11.0		7.7	42.6	29.3	L
9.3	43.8	57.1		9.5	27.9	20.8		8.3	3.2	31.1		9.2	44 8.3	18.2		9.0	45.5	47.3	
9.5	51.5	14.4		8.4	29.0	10.2	K	9.3	7.8	35.0		8.9	45 8.1	32.3	K	9.1	58 9.8	18.0	
9.4	4 3.2	12.3		9.5	37.4	1.7		9.5	28.9	22.5		8.3	13.7	34.6	K	9.2	10.0	23.4	
9.4	6.1	8.6		9.2	39.1	50.0		7.1	43.9	22.1	B	7.0	16.2	33.3	K	8.0	11.3	39.2	B
9.4	19.4	6.1		9.1	39.8	4.4		9.5	49.2	6.0		9.0	18.8	48.2		9.5	41.1	18.8	
9.1	21.3	0.9	B	9.5	58.7	55.7		9.2	59.4	59.0		9.1	27.4	39.5		9.3	45.2	55.0	
9.5	36.7	29.6		9.5	18 0.2	50.0		8.8	32 2.6	38.1		8.6	33.3	4.7		8.7	56.3	53.8	
8.5	43.2	26.0		9.5	1.3	11.3		9.5	23.7	1.1		9.2	35.2	49.2		8.8	59 3.9	58.2	
9.0	48.7	8.4	K	9.5	4.9	40.2		8.6	47.7	9.4		9.3	38.2	50.2		9.5	22.2	28.5	
9.4	5 7.0	11.0	B	9.4	18.9	5.5		8.8	33 4.6	43.0		9.1	55.7	36.3	K	7.5	45.6	42.5	
9.5	24.6	6.5	B	8.1	21.7	34.0	L	8.3	7.7	37.4	L	9.5	46 24.9	34.8		9.0	58.8	24.4	
8.8	31.1	13.2	B	8.6	34.1	23.9	B	8.3	10.8	38.5	K	9.5	40.7	4.4	B	9.4	0 13.1	13.3	
9.2	6 17.3	1.6	B	9.3	34.4	58.8		9.4	19.9	29.8		9.5	47 38.8	39.5		8.8	19.7	54.9	
8.7	18.2	12.1	B	9.5	48.7	57.5		9.5	25.8	55.2		9.4	48 4.4	4.6		9.0	24.6	17.8	
9.5	34.3	12.8		9.5	19 11.7	43.0		7.2	39.9	34.6	K	9.2	27.8	12.2		9.0	27.0	5.6	
8.0	36.6	4.8		8.3	12.6	32.3		9.0	50.7	43.0		9.3	35.2	29.4		8.8	28.2	38.3	
8.9	7 8.4	57.0		9.4	29.2	2.0		9.5	55.2	55.9		9.3	39.8	45.2	B	9.2	35.6	3.7	
9.5	21.5	6.2		8.8	41.2	19.1	B	9.5	34 32.1	31.9		9.3	56.7	50.6		9.5	1 17.0	27.8	

23ᵘ **+40°**

5001—5048				5049—5096				5097—5144				5145—5192				5193—5236			
	23ᵘ	+40°			23ᵘ	+40°			23ᵘ	+40°			23ᵘ	+40°			23ᵘ	+40°	
m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′		m	′ ″	′	
8.6	1 25.9	13.9		7.4	13 6.8	57.4	K	9.5	24 35.5	23.3		8.9	39 50.7	6.6	K	8.9	51 16.0	22.6	K
9.1	49.9	48.4		9.5	36.8	53.7	B	9.1	25 6.6	54.0		9.2	57.4	43.1		9.2	18.3	25.9	
9.5	50.6	41.8		9.4	50.4	49.2	B	8.9	10.8	7.9		9.1	59.0	11.0	K	9.4	23.5	2.3	
9.1	53.3	29.6	B	9.5	53.7	45.2		9.1	10.8	16.0		9.5	40 8.7	41.1		8.3	24.0	13.0	R
9.5	2 34.8	51.1		9.4	57.5	38.6		9.5	26 13.7	6.0		9.5	46.1	7.6		9.5	24.8	31.8	
8.0	3 43.6	30.6	K	9.5	14 15.5	47.2		9.1	23.6	26.1		8.0	53.4	18.2	K	9.5	43.8	2.2	
9.5	52.8	50.4		9.1	19.2	26.4		7.3	27.3	50.3	K	9.2	41 12.8	53.0		8.2	44.1	21.7	K
9.3	56.5	7.0		8.9	56.5	14.6		9.3	29.7	9.5		9.5	13.9	35.5		7.8	46.2	23.7	K
9.1	4 11.1	41.5		8.0	15 22.8	30.6	K	9.4	27 20.8	21.9		9.2	48.1	30.8		9.5	55.4	12.9	
9.3	12.1	45.5	B	8.6	35.7	58.0		9.5	37.4	41.8		9.2	48.2	36.7		8.3	56.8	19.6	K
9.4	15.7	48.3		9.5	16 9.3	17.1		9.2	28 8.8	57.7		9.5	42 31.0	30.5		9.1	52 0.0	33.9	
9.0	27.6	14.3	K	9.2	9.5	21.2		9.5	24.9	26.8		9.5	31.7	45.6		9.1	8.0	44.2	
9.3	5 3.8	58.8		9.4	28.2	41.7		9.5	34.8	6.4		8.6	43 16.9	55.7	K	9.5	23.8	54.8	
9.5	4.2	54.2		8.7	34.6	51.2		9.3	35.7	57.3		8.0	35.4	57.2	K	9.4	27.9	2.7	
9.5	40.6	2.6		8.8	46.8	7.5	K	9.1	48.5	56.3	B	9.5	38.6	10.2		9.2	28.8	10.6	
9.5	58.1	51.0		8.8	47.5	44.2		9.3	58.2	12.7		9.4	39.0	34.7		9.3	32.7	15.3	
7.3	6 23.0	41.7		6.5	17 12.6	49.7	G	9.5	29 10.3	11.7		7.8	42.0	21.6	G	9.5	39.3	27.6	
9.5	38.2	50.8		8.8	37.2	5.7		8.8	27.1	52.8		9.0	44 16.6	2.4		9.2	48.2	31.1	
9.0	44.5	41.4		9.3	37.5	20.7		9.5	30 16.9	0.5		9.4	38.0	30.3		9.3	53 0.6	47.4	
9.2	47.0	29.6		7.0	38.7	19.1	K	9.3	38.6	45.4		9.5	45 0.1	55.7		9.5	14.5	1.0	
9.2	59.4	11.2		9.1	47.2	26.2	B	9.4	48.6	32.7		9.4	17.0	2.8		9.5	41.1	54.2	
9.5	7 3.4	52.4		9.3	55.0	42.1		9.3	31 12.8	48.8		9.5	21.2	44.3		9.5	46.5	15.1	
8.0	5.1	0.9	K	9.4	56.9	37.2		8.1	27.0	10.0	B	7.0	42.4	32.5	K	8.5	57.7	0.4	K
9.2	11.2	48.8		9.5	18 34.2	20.9		8.9	28.8	49.4	B	9.4	42.4	57.0		9.5	54 1.3	14.5	
8.0	49.6	29.2	K	8.2	36.2	9.2	B	8.6	37.6	1.7		9.2	44.3	31.7	B	9.5	15.5	34.9	
9.0	53.3	0.4	K	8.5	36.6	13.0	B	8.9	38.5	15.7		9.5	47.7	7.2		9.5	37.6	51.6	
9.5	8 8.2	51.9		9.5	19 1.0	43.9		9.5	50.6	37.9		9.5	46 18.8	5.2		9.5	58.6	52.3	
7.3	9.2	21.9	K	9.5	21.2	22.6		9.5	32 6.2	23.0		9.2	21.2	20.0	R	9.5	55 16.9	8.5	
9.2	13.1	9.5		8.5	36.9	38.2	B	9.4	16.3	4.7		9.4	57.8	3.5		9.5	26.5	44.1	
9.4	30.1	7.0		7.5	44.1	13.9	K	9.3	28.4	17.5		9.2	47 8.2	15.6		9.5	32.0	21.7	
9.1	38.6	47.8	B	9.3	49.4	33.2		9.5	58.2	27.2		9.3	13.4	39.6		9.4	56 0.2	58.3	
9.4	57.0	51.8		9.0	20 28.0	23.7		9.1	34 10.6	2.5		9.5	27.5	28.2		9.4	24.6	1.7	
9.4	57.4	55.6		9.2	29.0	55.1		8.3	31.8	58.3	K	9.3	53.8	11.4		9.5	52.7	13.4	B
9.5	9 11.1	9.5		9.5	44.8	58.0		9.5	34.2	55.9		9.2	57.3	47.9		9.5	57 20.6	47.9	
9.5	22.4	43.1		9.2	21 10.6	43.5		9.5	49.4	41.0		8.3	48 5.0	16.5	K	9.5	25.1	37.9	
8.4	39.9	46.6	K	9.3	15.5	24.0		9.1	35 40.1	33.1	K	9.5	43.9	26.8		9.5	58 16.1	40.7	
8.5	58.6	10.8	K	9.3	16.2	31.2		8.8	40.8	30.3	K	9.5	52.7	12.8		9.5	16.3	24.1	
8.5	10 17.9	50.4		9.5	41.9	57.0		8.7	56.2	10.1	K	9.4	54.2	10.1		9.2	31.9	47.9	K
9.3	56.0	7.9		9.3	22 8.5	54.3	B	9.4	36 35.1	52.8		9.1	49 9.4	55.1		9.4	33.6	25.0	
9.1	57.9	3.2		9.5	12.5	59.0		9.5	37 5.5	42.4		9.4	32.1	34.7		9.5	41.5	13.1	
9.2	11 3.2	16.0		9.5	40.9	10.2		9.5	15.6	45.9	B	9.4	47.8	29.5		6.8	53.5	6.0	K
9.5	27.6	6.8		9.3	43.1	44.5		9.5	25.1	35.9		9.2	48.2	25.1		9.3	54.7	38.2	
6.2	31.8	58.7	K	9.3	51.7	23.6	B	9.3	27.3	3.0		7.8	50 1.8	48.4	K	9.1	59 34.5	22.3	
9.5	56.5	18.8		9.0	57.2	4.3		9.3	59.8	30.7		9.4	14.0	35.0		9.5	46.1	52.8	
9.3	12 14.8	34.4		9.5	59.6	27.1		9.4	38 46.9	11.0		9.5	14.5	9.1					
8.5	21.2	48.4		9.0	23 57.4	6.4	K	9.5	47.6	0.4		9.4	16.3	50.8					
9.4	37.2	50.3		9.2	24 5.9	41.4		9.0	39 42.5	25.8	K	9.2	30.0	15.0					
9.5	13 1.9	10.4		9.4	8.8	58.0		9.5	44.8	58.7		9.3	41.2	3.6					

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